Getting to Know the *Kentucky Academic Standards for Mathematics*

Facilitator's Guide

Spring 2019

Contents:

Module Overview:

The *Getting to Know the Kentucky Academic Standards for Mathematics* Module, developed by the Kentucky Department of Education (KDE), contains the materials to be used in work sessions at the district, school, or department level. These sessions are intended to support the successful transition to and implementation of the *Kentucky Academic Standards (KAS) for Mathematics* in classrooms across the state.

The duration, scope and sequence of the sections may be customized to accommodate local needs and conditions. The sections are designed to provide flexibility for districts and schools and, as such, can be viewed as standalone lessons or within the progression of the module as written.

Materials:

The following materials are part of this module:

- *Getting to Know the KAS for Mathematics Facilitator's Guide*
- *Getting to Know the KAS for Mathematics Participant Guides*
- *Getting to Know the KAS for Mathematics Handouts*
- *Getting to Know the KAS for Mathematics* slide presentation

All materials are available on the KDE website at kystandards.org

Goals:

The goals of the Getting to Know your *KAS for Mathematics* Module are for districts or schools to:

- Build a shared understanding of the *KAS for Mathematics* document.
- Strengthen the connection between the components of the *KAS for Mathematics* and the way those components can support educators in the process of designing instruction.
- Experience how the changes in the *KAS for Mathematics* can and will be reflected in student experiences within Kentucky classrooms.
- Identify and prioritize areas where future professional learning opportunities will be needed in the implementation process with the new *KAS for Mathematics* and discuss the plan to address those areas.

Intended Audiences:

Participants

Module participants are district teams that may include, but are not limited to, district leadership, school administrators, instructional specialists/coaches, intervention specialists, department chairs, special educators and classroom teachers. In addition, districts may choose to have anyone planning to conduct observations or walkthroughs in mathematics classrooms participate in this session in order to develop an understanding of the document that should be guiding the instruction witnessed in the classroom.

Facilitators

Module session facilitators may include, but are not limited to, district leadership, school administrators, instructional specialists/coaches, intervention specialists, department chairs, special educators and classroom teachers.

Using This Facilitator's Guide:

This facilitator's guide provides suggestions for structuring each section of Module 1, recommended activities to prompt meaningful investigation of the new *KAS for Mathematics* and guidance on talking points to use with the provided slideshows.

As you work through the Module 1 there will be activities provided to aid in developing participant knowledge and familiarity with the *KAS for Mathematics.* Facilitators may need to revise specific tasks in order to meet the needs of the participants or to be respectful of the time planned within the work session.

Helpful Hint

The implementation of the *KAS for Mathematics* will mean that there are changes for educators across the state. It is important to realize that while you are the facilitator of these work sessions, you may not have all the answers to the questions asked by participants. And that is okay.

Throughout the module participants may have questions that will be addressed in future work sessions. When that happens, reflect on this quote from Graham Fletcher, *"Every teachable moment, doesn't need to be a teachable moment, in that moment."* Use these moments to encourage participants to attend future work sessions where those questions will be addressed. If participants ask questions you are not prepared to answer, offer to follow up on that during the next work session. Weekly webcasts are planned throughout the facilitation of Module 1 that will offer support to facilitators.

Setup for Success

Some sections of the module begin with a "Setup for Success" intentionally embedded to promote an environment of trust between facilitators and participants and among the participants themselves. Throughout the module participants will be expected to collaborate in a variety of ways. Using the "Setup for Success" will be critical to successfully getting participants to actively participate and accept collective responsibility for the successful attainment of the module goals. Facilitators should feel free to adapt these activities to fit the size of the audience and the space of the work session, but should be mindful that the Setup for Success activities are not randomly chosen 'icebreaker' activities; they have been intentionally chosen within the purpose and scope of the entire module.

Planning Ahead:

- Determine which stakeholders to invite as participants. In the invitation, describe how the work sessions will benefit them.
- A few days before the meeting, you may want to remind participants to bring their documents to the meeting (see below for Participant Documents Needed).
- Reserve adequate space and equipment. Tables should be set up to support small-group discussion.
- Access to the Internet for participants is helpful but may not be necessary depending on how participants plan to engage with the *KAS for Mathematics.*
- Consider how you might handle participants who may not be in attendance at all work sessions. It might be worthwhile to consider how those participants might access missed sections of the module between work sessions in order to feel as prepared as the other participants.

Preparation:

Participant Documents Needed:

Ask participants to plan ahead regarding how they will feel most comfortable engaging with the *KAS for Mathematics*, either:

- A device with access to the *KAS for Mathematics*
- A hard copy of the *KAS for Mathematics* (at least one per team)

Facilitator Work Session Supplies Needed:

These items will be needed consistently throughout each section of the overall module. Supplies needed for specific sections of the module will be listed prior to the facilitator's notes for that section.

- Computer with access to the *Getting to Know the KAS for Mathematics* slide presentation
- Technology with projection capability
- Copies of Participant Guides and Handouts needed for the session
- Issues Bin:
  The Issues bin can be used by the participant to note ideas, questions, or issues constructively while the other attendees continue to focus on an activity or lesson. This may be a poster or you may prefer to have a digital Issues Bin where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module.
- Poster paper (optional unless otherwise indicated)
- Self-Sticking Notes (optional unless otherwise indicated)
- Colored markers (optional unless otherwise indicated)

Work Session Consideration:

Building a Community

Building a community is important for any group that will work together, especially if participants have not worked together before. The concept is the same as building a safe, respectful, productive classroom climate. Incorporating community-building into each session builds trust, shows participants that they are valuable as individuals and engages them in the learning process. It is also useful for creating a professional learning network where participants can be supported in their work. Community-building can be as simple as allowing participants to introduce themselves and their role in the school/district, developing or refining group norms, allowing for questions and/or the sharing of answers to reflection questions or individual discovery task items that are included in the Module 1 sections. Again, time allotted for community-building will allow participants to have a voice and be engaged as active contributors and learners in the sessions.

Module 1: Getting to Know the *Kentucky Academic Standards (KAS) for Mathematics*

Preparation for Section 1A: Revision Process Overview

Print Materials Needed:

As the facilitator you can print copies of the materials at the links provided or have participants print their own copies. If participants are responsible for printing their own copies, please specify that and provide necessary links within the invitation to the work session. Ensure that you have sufficient copies of the following documents within each work session.

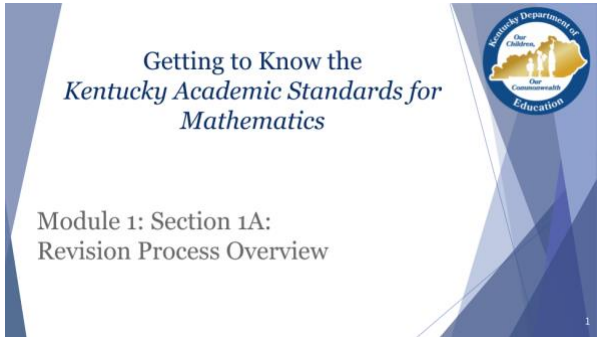
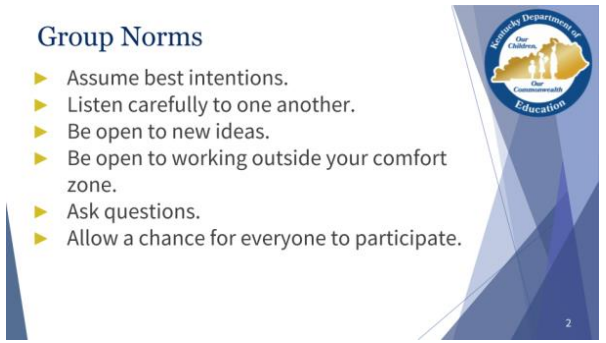
Posters to Make Ahead of Time:

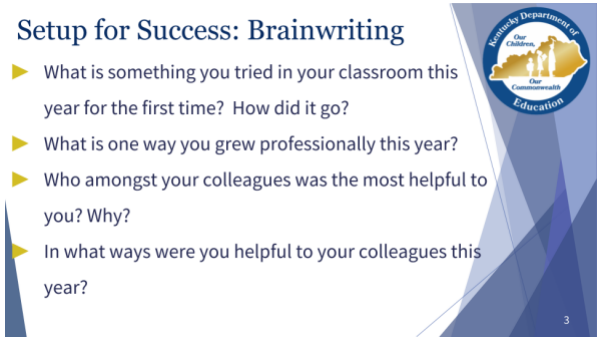
- Issues Bin Poster:
    - Poster can just be labeled "Issues Bin". The Issues bins can be used by the participant to note ideas, questions, or issues constructively while the class continues to focus on an activity or lesson. This may be a poster or you may prefer to have a digital Issues Bin where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module.

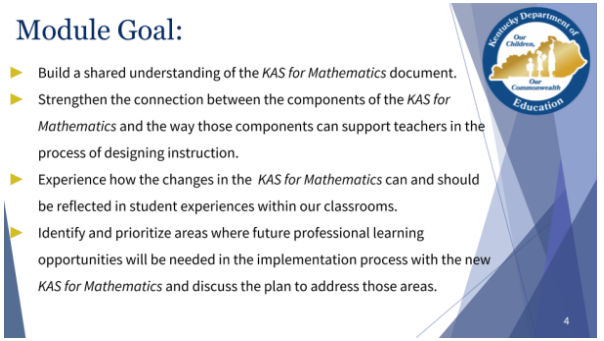
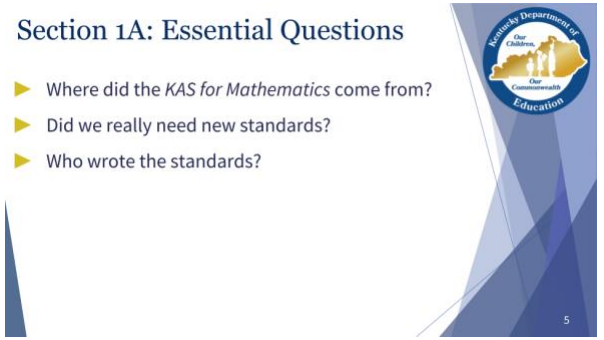
- Setup for Success: Brainwriting
    - Prepare four posters with one the following questions written per poster:
        - What is something you tried in your classroom this year for the first time? How did it go?
        - What is one way you grew professionally this year?
        - Who amongst your colleagues was the most helpful to you? Why?
        - In what ways were you helpful to your colleagues this year?

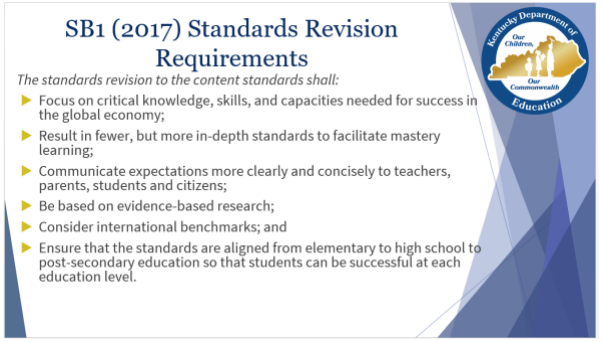
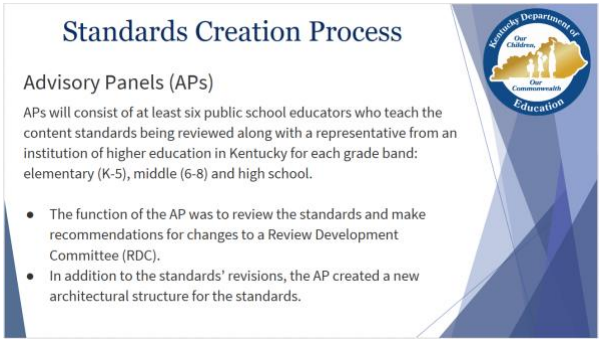
    To engage in Brainwriting digitally, you could try using something like https://padlet.com/ to allow participants to text in their responses to the questions and view everyone else's responses on the projection screen.

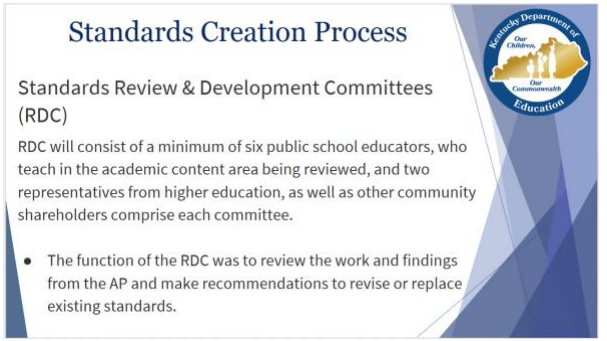
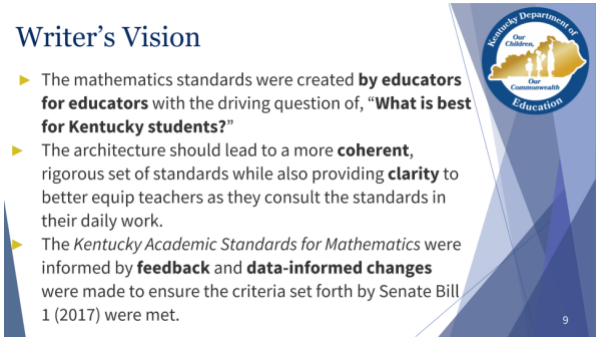
Section 1A: Revision Process Overview

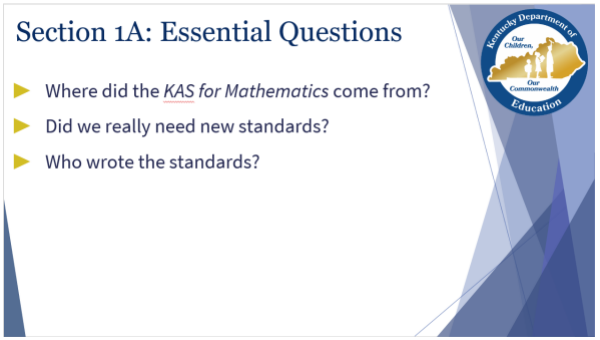
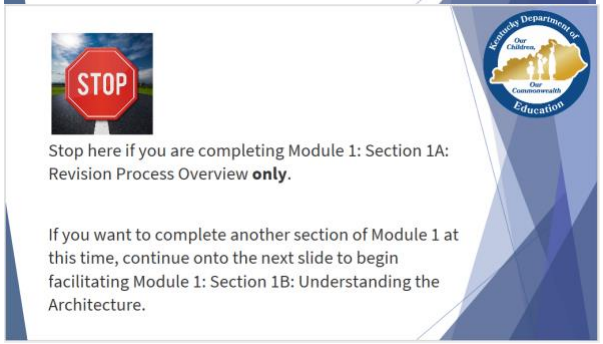
Facilitator Notes	Accompanying Slide(s)
Officially welcome the participants. Introduce yourself (if necessary). **Explain:** "Module 1 is intended to provide an introduction to the new *KAS for Mathematics.* The implementation of the *KAS for Mathematics* will mean that there are changes for educators and students across the state."	
Explain: "Group norms can help to create a safe space where participants feel comfortable sharing their ideas and experiences. This slide is a starter. Take a moment to read the norms." *After people are finished, ask if anyone would like to revise, edit or add any norms to the list. If so, make changes on the slide; if not, move on to your discussion of the Issues Bin.* **Explain:** "I realize you may not want to pose every question to the whole group, or we may not have time in the session to get to every question. Therefore, I want us to have a place for to address those issues. *Introduce participants to the Issues Bin. The Issues bin can be used by the participant to note ideas, questions, or issues constructively while the other attendees continue to focus on an activity or lesson. This may be a poster or you may prefer to have a digital parking lot where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module. The purpose of the Issues Bin is to provide*	

Facilitator Notes	Accompanying Slide(s)
participants with a safe way of asking questions or suggesting ideas. Participants should feel free to add to the Issues Bin throughout the module. *Remember that you may not know all of the answers to the questions, and that is okay. Some issues may be answered in future sections of the modules or in the optional weekly webcasts for facilitators. If the question is pressing and doesn't appear to be addressed in the sections of Module 1, talk to your district team and determine who would be the best person to contact at the KDE. You may also email questions or feedback to standards@education.ky.gov.*	
Setup for Success: Brainwriting **Explain:** There are undoubtedly great things happening in schools across our state. The process of aligning classroom instruction to the *KAS for Mathematics* will be at the center of the continuous improvement we strive for within our teaching practice and, as a result, within our students. Before you can know where you are going, it is helpful to consider where you've been. We are going to begin with that today." *The goal of this activity is for educators to understand that cultivating something better within our classroom doesn't mean forgetting or taking value away from the progress made up until this point. To engage in "Brainwriting" have participants answer three of the four questions from the slide on self-sticking notes (one note per question) and then stick them to the appropriate poster. Have participants do a quick "gallery walk" to see the responses of others to the questions. Facilitate discussion of the responses (if needed). To engage in Brainwriting digitally, you could try using something like https://padlet.com/ to allow participants to text in their responses to the questions and view everyone else's responses on the projection screen.* **Explain:** As we progress throughout this module, we hope you will embrace the opportunity to grow	

Facilitator Notes	Accompanying Slide(s)
professionally and consider how you can work with your colleagues to help one another build off of their current successes to continuously improve the classroom experience for students. *Facilitator Note: Letting participants choose which three questions to answer gives them choice while also allowing educators new to the profession to focus on the last three questions which would still apply in the teacher preparatory experience.*	
Explain: Throughout the work sessions in Module 1, the goals are for you to: ● Build a shared understanding of the *KAS for Mathematics* document. ● Strengthen the connection between the components of the *KAS for Mathematics* and the way those components can support educators in the process of designing instruction. ● Experience how the changes in the *KAS for Mathematics* can and will be reflected in student experiences within our classrooms. ● Identify and prioritize areas where future professional learning opportunities will be needed in the implementation process with the *KAS for Mathematics* and discuss the plan to address those areas.	
Explain: "This first section of Module 1 is intended to provide an introduction to the new *KAS for Mathematics*. Section 1A provides an overview of the standards revision process as required by Senate Bill 1 (2017) and the role that classroom teachers played in the revision process."	

Facilitator Notes	Accompanying Slide(s)
Explain: "The standards revision process occurs on a 6 year rotation per the directive of Senate Bill 1 (2017). These 6 main requirements guided the work." *Some talking points might be...* ● The writers had to consider what "critical knowledge, skills, and capacities were needed for success". The baseline is building the capacity for success within our students. ● In addition, students raised in Kentucky will be participating in a "global economy" and many Kentucky students need to demonstrate a mastery of "international benchmarks" in order reach the goals they've set for themselves. ● Current research governed choices throughout the revisions process, along with feedback from the public. **Explain:** "As we continue through this module, you'll notice the standards writers were very intentional and thoughtful in meeting the requirements of the law. For example, the writing teams took great care in communicating expectations clearly and concisely to all stakeholders, while at the same time providing supports that are intended to aid educators in aligning their instruction to the standards."	
Explain: "Several committees were formed as a result of this legislative charge. Members of the Advisory Panels (AP) and Review and Development Committee (RDC) were selected based on their expertise in the area of mathematics, and were practicing teachers in the field of mathematics. Members were chosen to ensure statewide representation in the standards revision process. Part of the work of the AP was to determine the 'architecture' of the *KAS for Mathematics.* For the writing team, determining the 'architecture' meant considering how to include: ● Clear and succinct components educators will find useful as they plan and design instruction	

Facilitator Notes	Accompanying Slide(s)
• Clear and succinct components other stakeholders will find useful in supporting the work happening within Kentucky classrooms. • Components that come together to create a cohesive structure within the *KAS for Mathematics*."	
Explain: "Part of the work of the RDC was to review the work and findings from the AP and make recommendations to revise or replace existing standards. Over 100 Kentucky teachers applied to be on the writing teams. A list of the writing committee members (including members of the AP and RDC) is found in Appendix B of the *KAS for Mathematics.*" **NOTE:** If participants would like more information on the standards revision process, direct them to the following sites: https://education.ky.gov/curriculum/standards/revision/Documents/Critical_Fact_Sheet_Revision_of_Standards.pdf https://education.ky.gov/curriculum/standards/revision/Pages/default.aspx https://education.ky.gov/curriculum/standards/revision/Documents/Kentucky%20Academic%20Standards_Review_and_Implementation_Timeline.pdf	
Explain: "In order to equip students with the knowledge and skills necessary to succeed beyond K-12 education, the writers consistently placed students at the forefront of the Mathematics standards revision and development work. The driving question was simple, 'What is best for Kentucky students?' As practicing classroom teachers, the writers saw value in providing supports for educators within the standards document itself as opposed to having various resources in other stand-alone documents. As we continue through this Module you'll get an introduction to the supports that have been embedded in within the *KAS for Mathematics*, but if you'd like more	

Facilitator Notes	Accompanying Slide(s)
information on the standards revision process or the writers' vision statements, see page 5 of the document."	
Facilitate discussion around the essential questions as needed in order to identify whether participants understand the content of Section 1A. *Potential Talking Points:* *Each committee member worked to enhance the standards' clarity and function so Kentucky teachers would be better equipped to provide high quality mathematics for each and every student. The resulting document is the culmination of the standards revision process: the production of a high quality set of mathematics standards to enable graduates to live, compete and succeed in life beyond K-12 education.*	
If you plan to facilitate multiple sections in the same work session, you can skip these slides and proceed to the intro slide for Section 1B: Understanding the Architecture. *If this is the end of your current work session, please consider asking participants to provide feedback on their experience so far with the module. These instructions will be provided at the end of each section to offer participants the opportunity to provide feedback that will be used by the KDE to plan and prepare future professional learning.* **Explain:** "The KDE needs your feedback on the effectiveness of this module, the learning platform and how the consultants may best support you as you take the next steps. We are going to complete a short survey to share our thinking and provide them with feedback on how the KDE can best meet our needs. Feedback from the surveys will be used by the KDE to plan and prepare future professional learning." *Provide participants with the following links:*	 

Facilitator Notes	Accompanying Slide(s)
• Module 1 Survey: https://www.surveymonkey.com/r/WDVSF6N • District/Administrator Module 1 Survey: https://www.surveymonkey.com/r/WD9THPG	

Module 1: Getting to Know the *Kentucky Academic Standards (KAS) for Mathematics*

Preparation for Section 1B: Understanding the Architecture

Print Materials Needed:

As the facilitator you can print copies of the materials at the links provided or have participants print their own copies. If participants are responsible for printing their own copies, please specify that and provide necessary links within the invitation to the work session. Ensure that you have sufficient copies of the following documents within each work session.

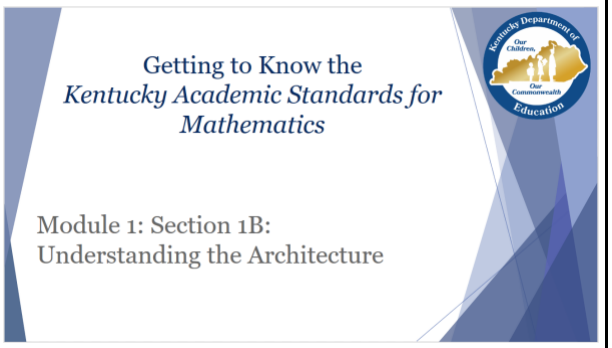
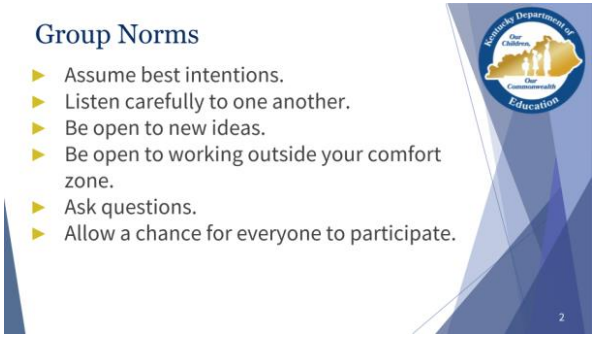
- Section 1B: Understanding the Architecture
    - Handout: K-5 Grade Level Overviews (optional) https://education.ky.gov/curriculum/standards/kyacadstand/Documents/K-5_Grade_Level_Overviews.pdf
    - Handout: 6-8 Grade Level Overviews (optional) https://education.ky.gov/curriculum/standards/kyacadstand/Documents/6-8_Grade_Level_Overviews.pdf
    - Handout: HS Conceptual Category Overviews (optional) https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Conceptual_Category_Overviews.pdf

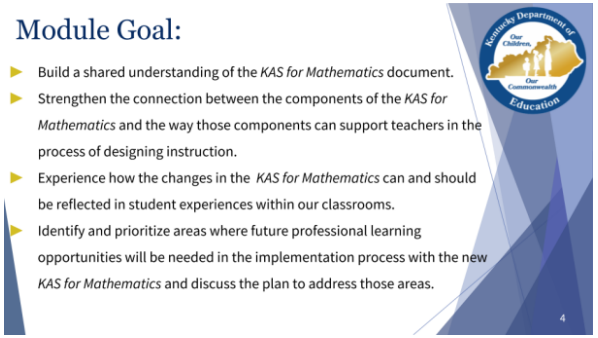
Posters to Make Ahead of Time:

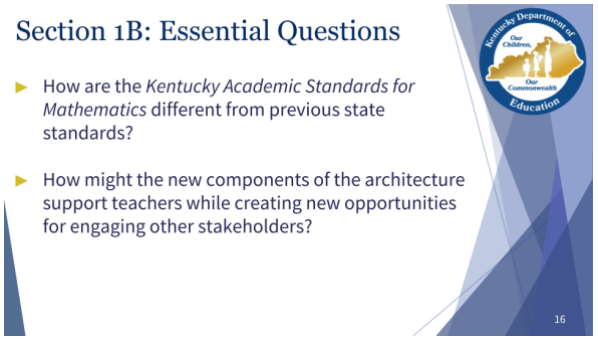
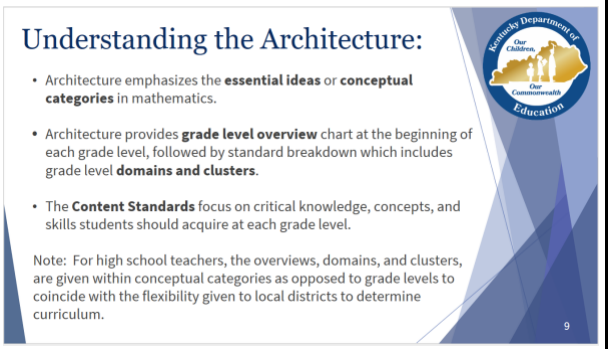
- Issues Bin Poster:
    - Poster can just be labeled "Issues Bin". The Issues bins can be used by the participant to note ideas, questions, or issues constructively while the class continues to focus on an activity or lesson. This may be a poster or you may prefer to have a digital Issues Bin where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module.

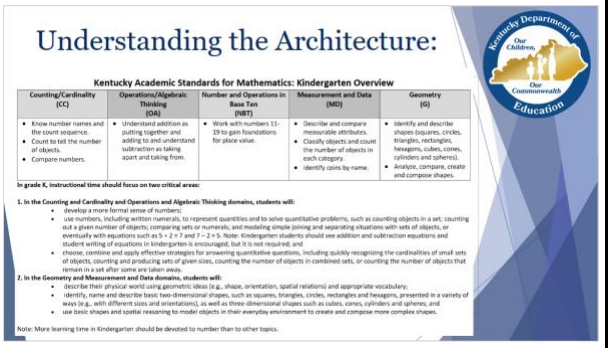
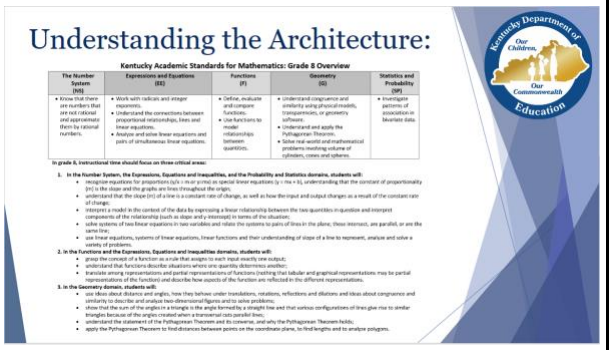
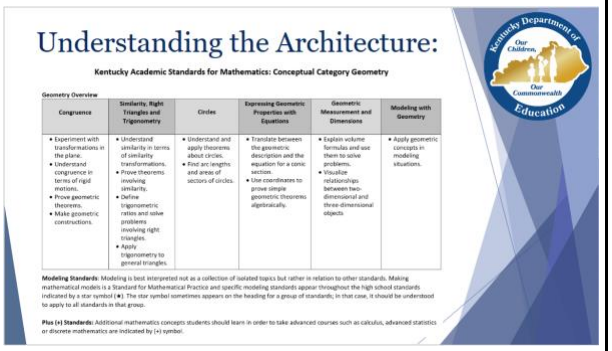
- Affinity Diagram Posters:
    - For the Affinity Diagram the facilitator will need to provide five posters, each labeled with one of the five stakeholder groups listed (Teachers, Administrators, Parents, Students, and Citizens). As participants identify a way the KAS for Mathematics can support that stakeholder group, those should be described on a self-sticking note and stuck to that particular poster. If preferred, this work could also be housed in an online platform, a Google document, for example, that could be modified as the participants work through the additional sections of the module.

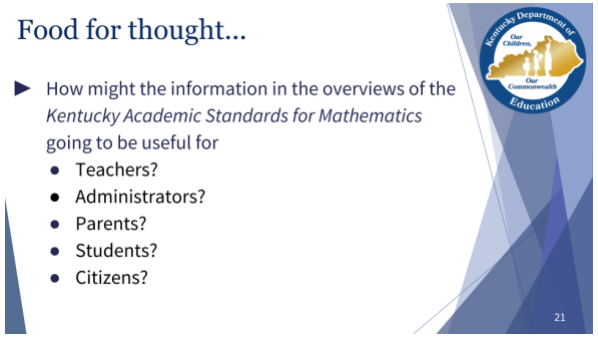
Section 1B: Understanding the Architecture

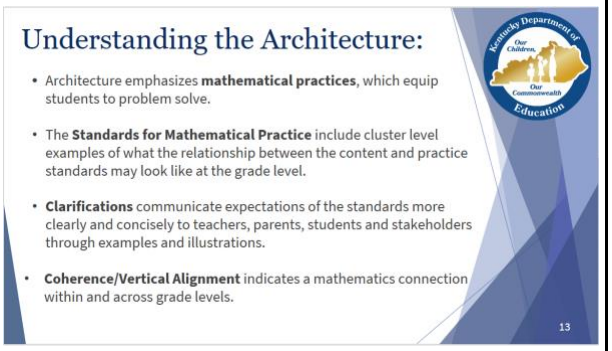
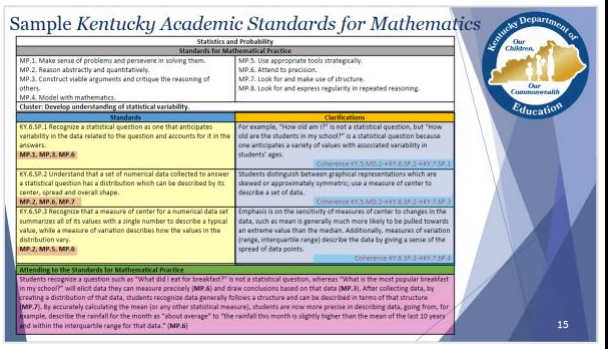
Facilitator Notes	Accompanying Slide(s)
If facilitating Section 1B in the same work session as Section 1A... **Explain:** "Now that you are informed about the standards revision process, we're going to take a look at the specific components of the *KAS for Mathematics* architecture." *Proceed to the Section 1B: Essential Question slide.* ***If facilitating Section 1B in a separate work session from Section 1A…*** *Officially welcome the participants. Introduce yourself (if necessary).*	
Explain: "Group norms can help to create a safe space where participants feel comfortable sharing their ideas and experiences. Take a moment to read the norms." *Discuss group norms.* ***NOTE: If participants made changes to this slide in the session within Section 1A, you will need to update this slide to reflect those changes moving forward.*** **Explain:** "I realize you may not want to pose every question to the whole group, or we may not have time in the session to get to every question. Therefore, I want us to have a place for to address those issues. *Introduce participants to the Issues Bin. The Issues bin can be used by the participant to note ideas, questions, or issues constructively while the other attendees continue to focus on an activity*	

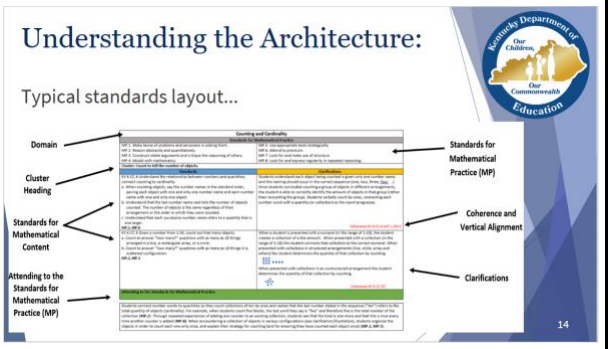
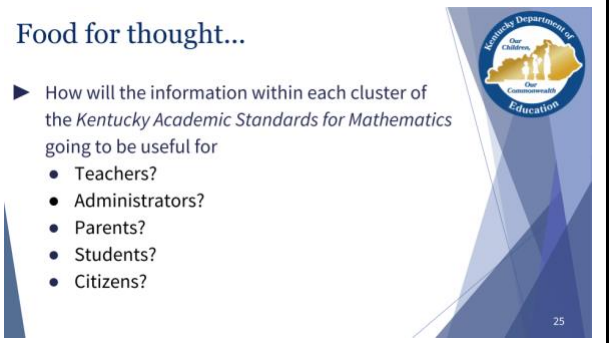
Facilitator Notes	Accompanying Slide(s)
or lesson. This may be a poster or you may prefer to have a digital parking lot where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module. The purpose of the Issues Bin is to provide participants with a safe way of asking questions or suggesting ideas. Participants should feel free to add to the Issues Bin throughout the module.	
Explain: *"*The implementation of the *KAS for Mathematics* will mean that there are changes for educators and students across the state. Throughout the work sessions in Module 1, the goals are for you to: ● Build a shared understanding of the *KAS for Mathematics* document. ● Strengthen the connection between the components of the *KAS for Mathematics* and the way those components can support educators in the process of designing instruction. ● Experience how the changes in the *KAS for Mathematics* can and will be reflected in student experiences within our classrooms. ● Identify and prioritize areas where future professional learning opportunities will be needed in the implementation process with the *KAS for Mathematics* and discuss the plan to address those areas. *Remember that you may not know all of the answers to the questions, and that is okay. Some issues may be answered in future sections of the modules or in the optional weekly webcasts for facilitators. If the question is pressing and doesn't appear to be addressed in the sections of Module 1, talk to your district team and determine who would be the best person to contact at the KDE. You may also email questions or feedback to standards@education.ky.gov.*	

Facilitator Notes	Accompanying Slide(s)
Explain: "Today, we will begin to take a deeper look at the architecture of the standards in order to build our shared understanding of the *KAS for Mathematics*. Outside of any revisions to the mathematical standards themselves, one of the major changes you'll note is with the architecture of the document. *Participants who were present for Section 1A might remember this, but it will be new to first time participants:* **Explain:** For the writing team, determining the 'architecture' meant considering ● Clear and succinct components educators will find useful as they plan and design instruction ● Clear and succinct components other stakeholders will find useful in supporting the work happening within Kentucky classrooms. ● Components that come together to create a cohesive structure within the *KAS for Mathematics*."	
Explain: "The new *KAS for Mathematics* will look very different than the previous state standards. The organization of the standards directly reflects the charge of Senate Bill 1 (2017) to 'Focus on critical knowledge, skills, and capacities needed for success in a global economy' and to 'Communicate with all stakeholders'. The writers reviewed public feedback and considered components of architectures from 15 other states (Ok, Indiana, NC, Mass, NY, AZ, WV, CO, CA, Idaho, Iowa, NJ, Louisiana, OH, and Kansas) to develop the architecture you'll see in the *KAS for Mathematics.* So, let's take a look at the architecture of the standards and, as we go through, begin to take note of what you see and how it can be useful when you begin the work of aligning your instruction to the standards."	

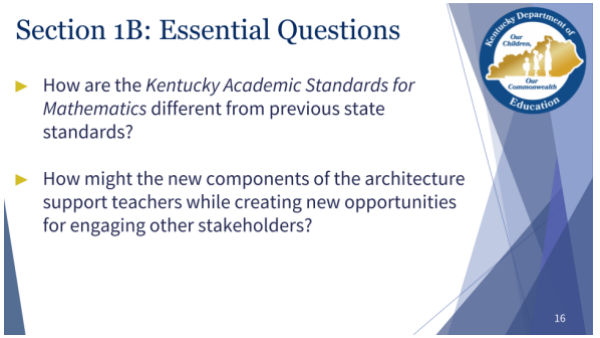
Facilitator Notes	Accompanying Slide(s)
Explain: "Let's start by locating the overview for the content standards most relevant to your role. For grades K-8, you'll be looking for a "grade level" overview. The standards for high school are broken into five "conceptual categories" and so you'll need to locate each of those five overviews. Find the page that identifies the essential ideas for your grade level. Take a moment to familiarize yourself with the information on this page and consider how this page will be useful to you." *Understand that some participants will prefer to access the standards with technology, whereas other participants might prefer a hard copy. Encourage participants to begin to engage with the document whether by flagging key pages and/or by highlighting and commenting on the document directly or within the electronic format. For participants who do not have a way to access the KAS for Mathematics, you may want to have copies of grade level/conceptual categories overviews, but later in the section they will need to share with another participant to look at the clusters that are applicable to them.* *Give participants time to look through the document to find the targeted page(s). Keep in mind that the purpose of this module is to get participants into the KAS for Mathematics document, so it is important to have them explore the document, but if participants are having trouble navigating to the pages they are looking for, the locations you may wish to direct them toward are provided.* --- *If facilitating a group of **elementary** school educators, show slide 18.* *Kindergarten: p. 15* *First Grade: p. 28-29* *Second Grade: p. 44* *Third Grade: p. 59-60* *Fourth Grade: p. 75-76* *Fifth Grade: p. 96*	  

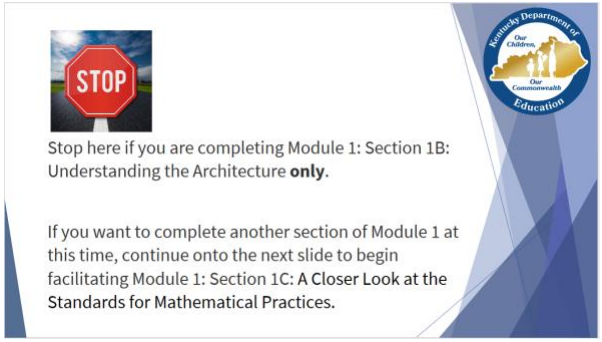
Facilitator Notes	Accompanying Slide(s)
*If facilitating a group of **middle** school educators, show slide 19.* *Sixth Grade: p. 115-116* *Seventh Grade: p. 134-135* *Eighth Grade: p. 152* *If facilitating a group of **high** school educators, show slide 20.* *Number & Quantity: p. 169* *Algebra: p. 180* *Functions: p. 193* *Geometry: p. 207* *Statistics & Probability: p. 226* *Calculus (+): p. 238*	
Affinity Diagram: *Ask participants (individually, with a partner or in a small grade-banded group) to consider how this document may be useful to multiple stakeholders and organize their ideas in an Affinity Diagram. Affinity diagrams can be used by the participants to brainstorm information and ideas which are then organized into categories.* *Materials:* ● *1 piece of poster paper per stakeholder group* ● *Markers* *After participants have had time to collaborate, facilitate whole group discussion over the questions.* *Possible responses might be:* ● *For a principal or district leader who may not be an expert on the specific content standards, the overview document provides a snapshot of what he or she might look for in a walk-through or formal observation.* ● *At a parent conference, a parent might be better served by seeing a general overview of how*	

Facilitator Notes	Accompanying Slide(s)
the strands work together instead of processing each of his or her child's grade-level standards. *Extension: This may be a good opportunity for participants to consider how to ensure stakeholders understand the tools within the KAS for Mathematics and can support the classroom experience. Based on this discussion, consider asking if an additional document might need to be created for a particular stakeholder. What might be its purpose? Make-up? Design?* *Consider maintaining a Google document to house these reflections for continued consideration and further application.*	
The facilitator will want to familiarize themselves with where each of the specific components mentioned on the first slide are located within the second slide. The second slide has animations and highlights each component of the architecture separately as the facilitator continues through the slide. **Explain:** "With that being said, let's continue to investigate the new components of the *KAS for Mathematics*. One big shift that you'll notice as you look at the general architecture of the standards is the emphasis placed on the Standards of Mathematical Practice (SMP). At each cluster level educators will see narratives on how the standards of mathematical practice might be attending to in conjunction with the standards for mathematical content. It is **CRITICAL** for mathematics educators, support staff and administrators to realize that the SMPs **are additional standards** and are a part of the state expectations as set forth in the *KAS for Mathematics."* ***Note: Module 1: Section 1C: A Closer Look at the Standards for Mathematical Practices contains more information on this.*** **Explain:**	 

Facilitator Notes	Accompanying Slide(s)
"The inclusion of Clarifications reinforces the goal of Senate Bill 1 (2017) to clearly communicate the expectations of the standards to teachers, parents, students and citizens. The Coherence/Vertical Alignment component will provide additional guidance regarding horizontal and vertical alignment." ***Note: Module 1: Section 1E: Spotlight: Clarifications & Coherence contains more information on this.***	
Explain: "A sample cluster-level layout with the key components labelled can be found on page 10 of the *KAS for Mathematics*."	
Explain: "In Section 1A the legislation driving the standards revision process was outlined. One charge of Senate Bill 1 (2017) was for the standards to "communicate expectations more clearly and concisely to teachers, parents, students and citizens." Let's take a moment to consider how elements of the architecture relate to that statement. Return to your grade level (or conceptual categories for high school) and take a closer look at the components of the architecture. Brainstorm how the information in the overviews and the components within each cluster of the standards might be useful for the multiple stakeholders for whom it was intended." **Continue adding to the Affinity Diagram:** *Ask participants (individually, with a partner or in a small grade-banded group) to consider how the cluster level organization within the KAS for Mathematics may be useful to multiple stakeholders and add those ideas onto the Affinity Diagram.*	

Facilitator Notes	Accompanying Slide(s)
After participants have had time to collaborate, facilitate discussion over the questions. *Possible responses might be:* ● *Standards for Mathematical Practices* *Many **teachers** are unfamiliar with the SMPs and will need guidance for how to incorporate them into instruction. The SMPs will give **administrators** insight into experiences students should consistently be having within classroom instruction. The SMPs also represent skills that generate capacity within **students** throughout and beyond their K-12 experiences and are the same skills that **employers** will look for in prospective employees.* ● *Clarifications* *The Clarifications will assist **teachers**, especially those new to the profession, understand the intent of the standards. For **administrators** who do not have strong mathematical backgrounds, the Clarifications provide a tool that will help them better assess the teaching and learning taking place in the classroom. For **parents** and **citizens** who do not have strong mathematical backgrounds, the Clarifications provide a tool that will help them better understand what students should be learning. When considering **student** level learning targets, the Clarifications may provide **student-friendly** explanations of the content standards.* ● *Coherence/Vertical Alignment* *The Coherence/Vertical Alignment piece will be useful for **teachers** and **administrators** as districts, schools, and departments begin the work of aligning their curriculum to the standards. **Teachers** and **parents** can use the Coherence/Vertical Alignment to provide targeted support for students who need intervention, as well as to guide enrichment for students ready to progress.* *Extension: Consider how to ensure stakeholders understand the tools within the KAS for*	

Facilitator Notes	Accompanying Slide(s)
Mathematics and can support the classroom experience. Based on this discussion, consider asking if an additional document might need to be created for a particular stakeholder. What might be its purpose? Make-up? Design? *Consider adding these ideas to a Google document to house these reflections for continued consideration and further application. This discussion will be a great reference for your participants in planning the next steps toward implementing the KAS for Mathematics in Section 1G.*	
Facilitate discussion around the essential questions as needed in order to identify whether participants understand the content of Section 1B. *Potential talking points:* *The writers believed the proposed revisions will lead to a more coherent, rigorous set of Kentucky Academic Standards for Mathematics.* ● *These standards differ from previous standards in that they intentionally integrate content and practices in such a way that every Kentucky student will benefit mathematically.* ● *In addition, as we just discussed, there are supports within the standards that have been added to support groups of stakeholders. Refer to Affinity Diagram if needed.*	
Pulse Check - Make the point that participants aren't expected to be experts on the architecture and components of the standards document at this point. This is new learning, and there is a lot of information in this section. If you ask, "Do you feel you have a better understanding of the architecture and how specific components can support you in your role?" and participants say "no", offer to send them the slides for this section, suggest they review the information found on pages 9-14 of the front matter in the KAS for Mathematic, and take time to read and explore the document. If they have additional questions, be sure those are recorded in the Issues Bin for future reference.	

Facilitator Notes	Accompanying Slide(s)
Explain: "The next sections within Module 1 concentrate on providing more information around the specific components of the standards and how those components will impact planning instruction. In the Section 1C we'll take a closer look at the SMPs." *If this is the end of your current work session, please consider asking participants to provide feedback on their experience so far with the module. These instructions will be provided at the end of each section to offer participants the opportunity to provide feedback that will be used by the KDE to plan and prepare future professional learning.* **Explain:** "The KDE needs your feedback on the effectiveness of this module, the learning platform and how the consultants may best support you as you take the next steps. We are going to complete a short survey to share our thinking and provide them with feedback on how the KDE can best meet our needs. Feedback from the surveys will be used by the KDE to plan and prepare future professional learning." *Provide participants with the following links:* • Module 1 Survey: https://www.surveymonkey.com/r/WDVSF6N • District/Administrator Module 1 Survey: https://www.surveymonkey.com/r/WD9THPG	

Module 1: Getting to Know the *Kentucky Academic Standards (KAS) for Mathematics*

Preparation for Section 1C: A Closer Look at the Standards for Mathematical Practice

Print Materials Needed:

As the facilitator you can print copies of the materials at the links provided or have participants print their own copies. If participants are responsible for printing their own copies, please specify that and provide necessary links within the invitation to the work session. Ensure that you have sufficient copies of the following documents within each work session.

- Section 1C: A Closer Look: Standards for Mathematical Practice
  - Participant Guide: Attending to the SMPs
    Kindergarten: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Kindergarten_Cluster_SMP_Activity.pdf
    First Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/First_Grade_Cluster_SMP_Activity.pdf
    Second Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Second_Grade_Cluster_SMP_Activity.pdf
    Third Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Third_Grade_Cluster_SMP_Activity.pdf
    Fourth Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Fourth_Grade_Cluster_SMP_Activity.pdf
    Fifth Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Fifth_Grade_Cluster_SMP_Activity.pdf
    Sixth Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Sixth_Grade_Cluster_SMP_Activity.pdf
    Seventh Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Seventh_Grade_Cluster_SMP_Activity.pdf
    Eighth Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Eighth_Grade_Cluster_SMP_Activity.pdf
    HS Algebra: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Algebra_Cluster_SMP_Activity.pdf
    HS Functions: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Functions_Cluster_SMP_Activity.pdf
    HS Geometry: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Geometry_Cluster_SMP_Activity.pdf
    HS Stats/Prob: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Statistics_Probability_Cluster_SMP_Activity.pdf
    HS Calculus: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Calculus_Cluster_SMP_Activity.pdf

  - Participant Guide: SMP Sample Task Match-up
    Kindergarten:
    https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_Kindergarten.pdf

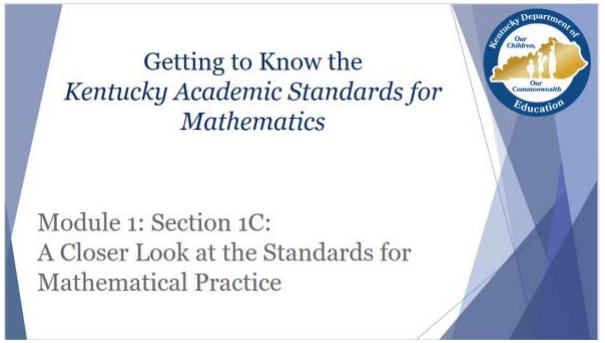
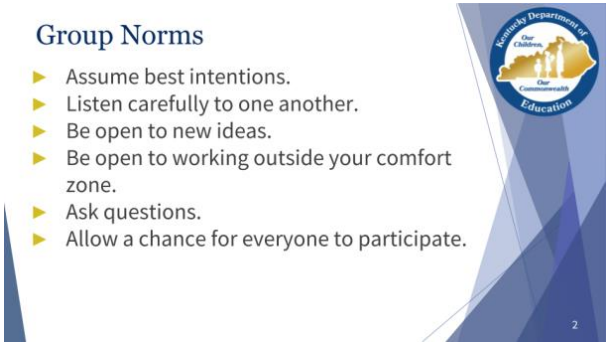
First Grade:
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_First_Grade.pdf
Second Grade:
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_Second_Grade.pdf
Third Grade:
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_Third_Grade.pdf
Fourth Grade:
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_Fourth_Grade.pdf
Fifth Grade:
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_Fifth_Grade.pdf
Sixth Grade:
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_Sixth_Grade.pdf
Seventh Grade:
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_Seventh_Grade.pdf
Eighth Grade:
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_Eighth_Grade.pdf
High School Set 1:
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_High_School_Set_1.pdf
High School Set 2:
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1C_Practice_Standards_Discovery_Activity_High_School_Set_2.pdf

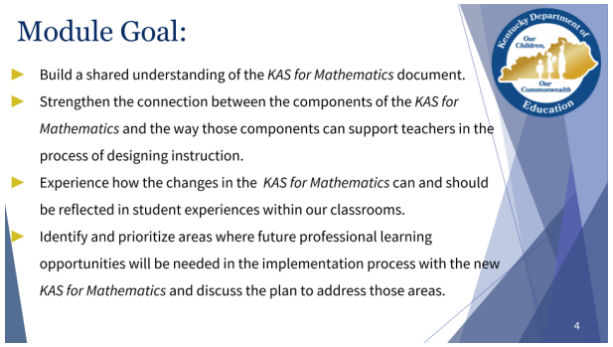
- Handout: Engaging the SMPs: Look fors & Question stems: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/SMP_Look_Fors_and_Question_Stems.pdf

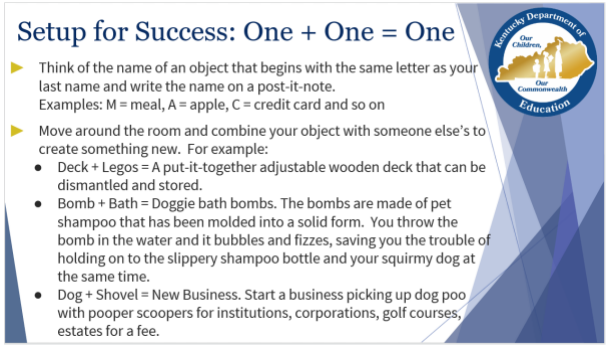
Posters to Make Ahead of Time:

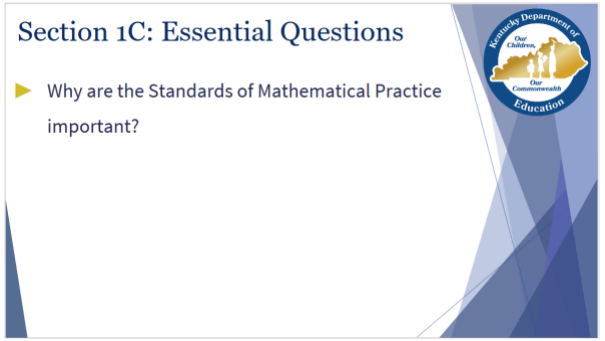
- Issues Bin Poster:
    - Poster can just be labeled “Issues Bin”. The Issues bins can be used by the participant to note ideas, questions, or issues constructively while the class continues to focus on an activity or lesson. This may be a poster or you may prefer to have a digital Issues Bin where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module.

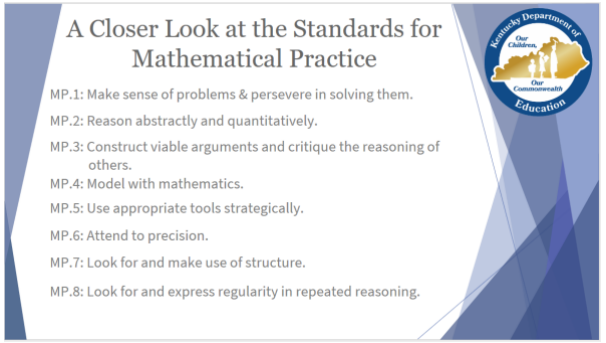
Section 1C: A Closer Look at the Standards for Mathematical Practice

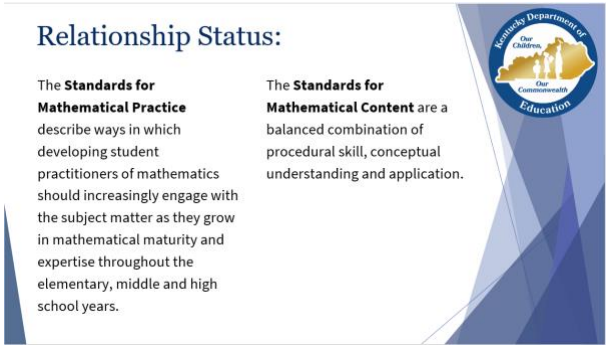
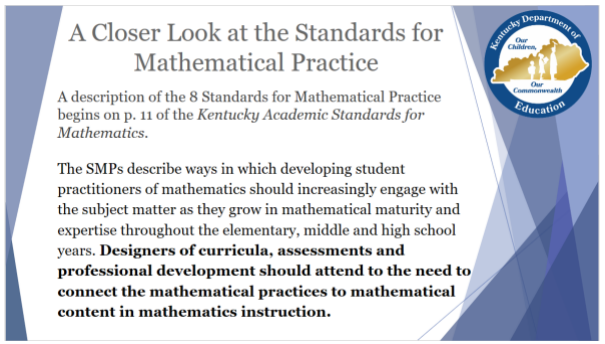
Facilitator Notes	Accompanying Slide(s)
If facilitating Section 1C at the same time as Section 1B... Continuing through Module 1, Section 1C focuses on how the Standards for Practice are included and supported within the *KAS for Mathematics*. **If facilitating Section 1C at a different time from Section 1B...** *Officially welcome the participants. Introduce yourself (if necessary).*	
Explain: "Group norms can help to create a safe space where participants feel comfortable sharing their ideas and experiences. Take a moment to read the norms." *Discuss group norms.* ***NOTE: If participants made changes to this slide in the session within Section 1A, you will need to update this slide to reflect those changes moving forward.*** **Explain:** "I realize you may not want to pose every question to the whole group, or we may not have time in the session to get to every question. Therefore, I want us to have a place for to address those issues." *Introduce participants to the Issues Bin. The Issues bin can be used by the participant to note ideas, questions, or issues constructively while the other attendees continue to focus on an activity or lesson. This may be a poster or you may prefer to have a digital parking lot where participants can access a Google document, for example, to post questions and that you can*	

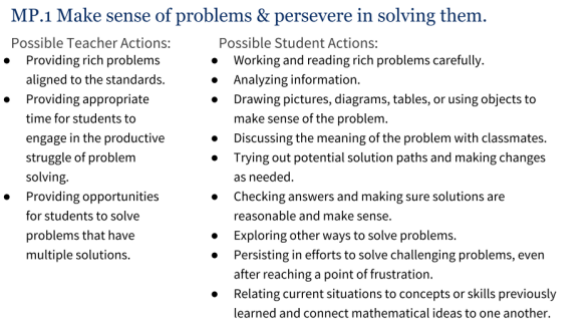
Facilitator Notes	Accompanying Slide(s)
modify as the participants work through the sections of the module. The purpose of the Issues Bin is to provide participants with a safe way of asking questions or suggesting ideas. Participants should feel free to add to the Issues Bin throughout the module.	
Explain: "The implementation of the *KAS for Mathematics* will mean that there are changes for educators and students across the state. Throughout the work sessions in Module 1, the goals are for you to: ● Build a shared understanding of the *KAS for Mathematics* document. ● Strengthen the connection between the components of the *KAS for Mathematics* and the way those components can support educators in the process of designing instruction. ● Experience how the changes in the *KAS for Mathematics* can and will be reflected in student experiences within our classrooms. ● Identify and prioritize areas where future professional learning opportunities will be needed in the implementation process with the *KAS for Mathematics* and discuss the plan to address those areas. Section 1C is where we will begin to look more closely at the connections between the components that address the Standards for Mathematical Practice (SMP), how those components can support teachers when designing instruction and how that will be reflected in student experiences within Kentucky classrooms." *Remember that you may not know all of the answers to the questions, and that is okay. Some issues may be answered in future sections of the modules or in the optional weekly webcasts for facilitators. If the question is pressing and doesn't appear to be addressed in the sections of Module 1, talk to your district team and determine who would be the best person to contact at the KDE. You may also email questions or feedback to standards@education.ky.gov.*	

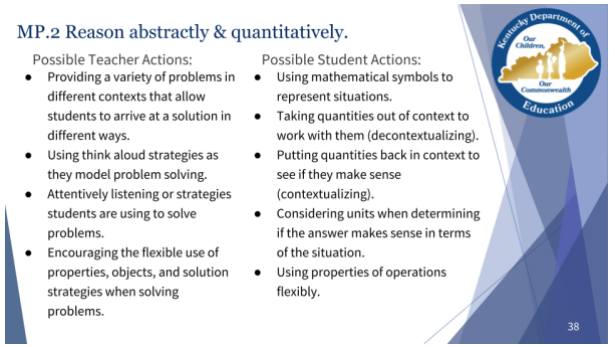
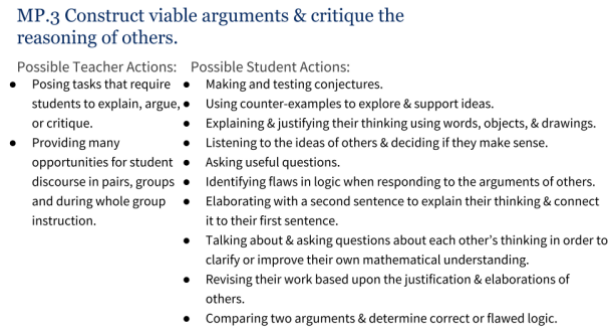
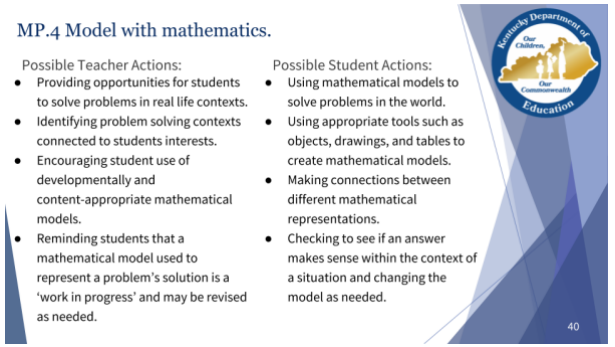
Facilitator Notes	Accompanying Slide(s)
Setup for Success: One + One = One **Explain:** Before you panic, since this module focuses on mathematics, we know that mathematically One + One = Two. BUT if we think outside the box, when you add one concept to another, they make one concept not two. Consider how you readily understand verbal combinations such as "conference call," "home page," and "party girl". *To engage participants in One + One = One, ask participants to think of the name of an object that begins with the same letter as their last name. Examples: M = meal, A = apple, C = credit card, D = diamond, E = energy bar and so on. Write the name on a post-it-note. Now ask the participants to move around the room and combine their object with someone else's and create something new.* *Examples:* ● *Rock + Chair = A spongy mat that you can put on top of rocks to transform any rock into a chair.* ● *Deck + Legos = A put-it-together adjustable wooden deck that can be dismantled and stored.* ● *Desk + Treadmill = A treadmill desk. You can walk at a 1 mph pace while you work at your computer. Guaranteed to lose weight without dieting.* ● *Bomb + Bath = Doggie bath bombs. The bombs are made of pet shampoo that has been molded into a solid form. You throw the bomb in the water and it bubbles and fizzes, saving you the trouble of holding on to the slippery shampoo bottle and your squirmy dog at the same time.* ● *Dog + Shovel = New Business. Start a business picking up dog poo with pooper scoopers for institutions, corporations, golf courses, estates for a fee.* *For more information on the activity One + One = One visit here.*	

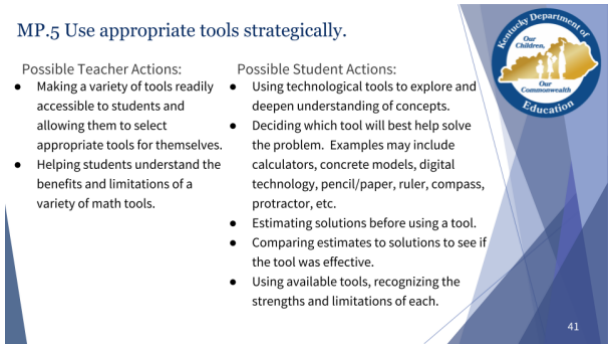
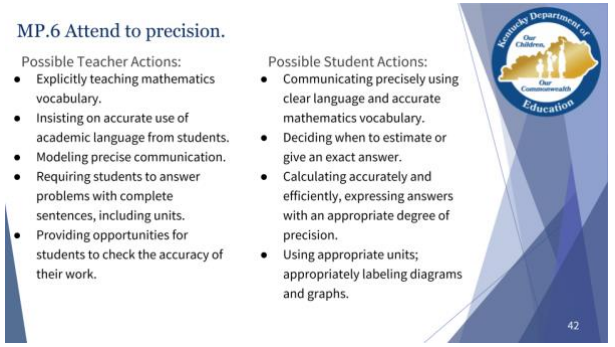
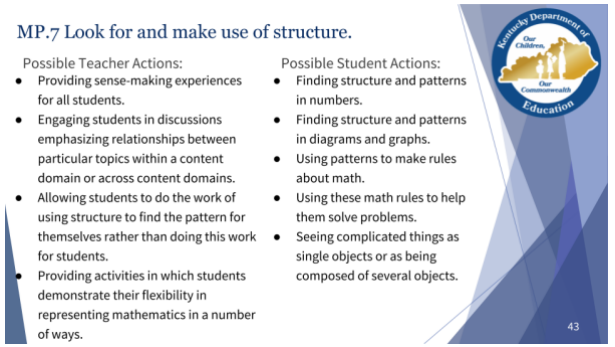
Facilitator Notes	Accompanying Slide(s)
Explain: "One + One = One involves bringing together ideas that serve very different needs or interests to form a new concept. This technique can produce some silly results, but hopefully it gave you a chance to think outside of the box. Later in this section, you'll apply that outside of the box thinking and to how you plan and implement instruction. You'll be asked to take tasks designed to align to one SMP and determine how, through intentional focus on language and questioning, the task could be revised to align with a different SMP." *One + One = One provides a platform to develop within educators a willingness to think differently and intentionally about how they design tasks and ask questions.*	
Explain: "In this session, participants will take notice of the intentional emphasis the writers placed on the Standards of Mathematical Practice (SMP) within the *KAS for Mathematics* and will recognize the impact that will need to have on planning and implementing classroom instruction moving forward."	

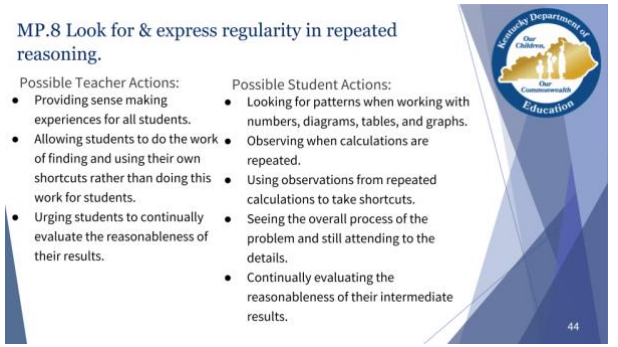
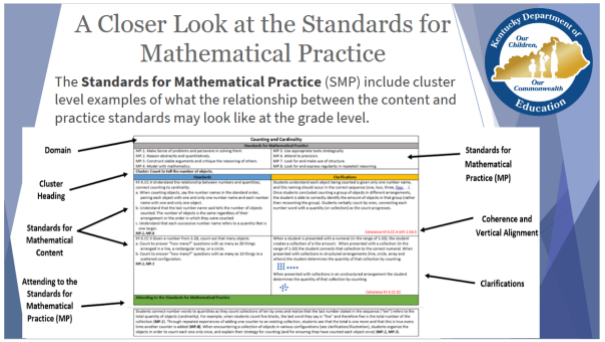
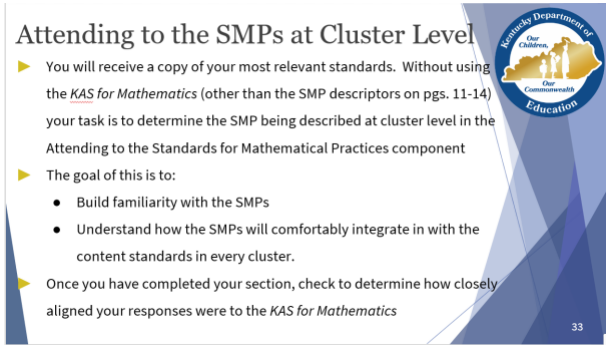
Facilitator Notes	Accompanying Slide(s)
The facilitator may want to preview this slide prior to the work session in order to gain familiarity with the animations. If participants in this work session have already accessed the KAS for Mathematics, the facilitator will need to make sure they are not accessing the document at the time of this activity. **Explain:** While the SMPs are consistent with the previous standards, educators throughout the state have had various amounts of exposure to the SMPs. How well do you know the 8 Standards for Mathematical Practice? Work individually, with a partner or in small groups to see how many of the mathematical practices you can list. *Give participants time to try to list the 8 SMPs. Facilitate discussion around this task. Remind participants that if they found this task difficult or uncomfortable that just means they have not developed comfort with these,* ***yet****. As educators, we encourage our students to be patient and to have a growth mindset. Classroom teachers should value that opportunity within their own practice. Identifying areas of growth through this standards roll out process will empower classroom teachers and administrators to be proactive in addressing those areas moving forward. Since the SMPs themselves are not new, some groups of participants will have had a lot of training on implementation. This activity should give you some sort of idea with your participant group's familiarity with the SMPs and how quickly they can progress through this section of the module.* *Optional: Have a reward of some kind, even just a high five (if it's not during flu season) for the participants who knows all eight. If there are several participants, reward them all or reward whoever lists them the fastest. In a perfect world, all KY educators would know these fluently, and that is what we are beginning to work toward in this module. BUT there is nothing wrong with celebrating victories with your participants along the way.*	

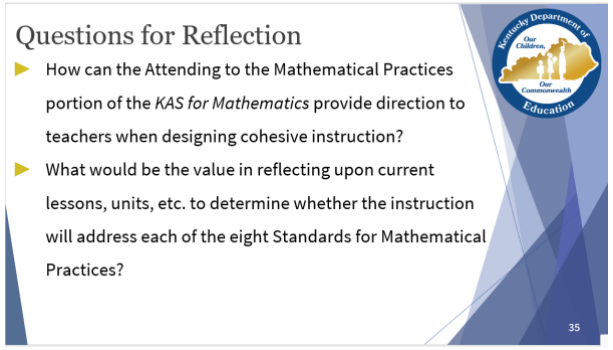
Facilitator Notes	Accompanying Slide(s)
Explain: "In order to understand the purpose and function, we must first understand how the practices are different from the content standards for mathematics. ● The Standards for Mathematical Practice describe ways in which developing student practitioners of mathematics should increasingly engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. ● The Standards for Mathematical Content are a balanced combination of procedure, understanding and application. ● Expectations that begin with the word "understand" are often good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily and may be less likely to consider similar problems, represent problems coherently, justify conclusions, apply mathematics to practical situations, use technology mindfully, and explain the mathematics accurately to other students, step back for an overview or deviate from a known procedure to find a shortcut. In short, **a lack of understanding effectively prevents a student from engaging in the mathematical practices**."	
Over the course of the next 8 slides, allow participants to take a few minutes to carefully read the descriptions of the SMP from the KAS for Mathematics beginning on p.11 then as the facilitator you can lead discussion addressing the look fors from the slide. *This is a great opportunity to let participants own a lot of the discussion. Allow participants to share as you progress through these 8 descriptive slides. Some things you might ask them to think about as you go through might be…* ● *Can you share about an experience within your classroom when students were engaging in this SMP? How might you approach designing instruction differently if you wanted students to engage in this practice?*	

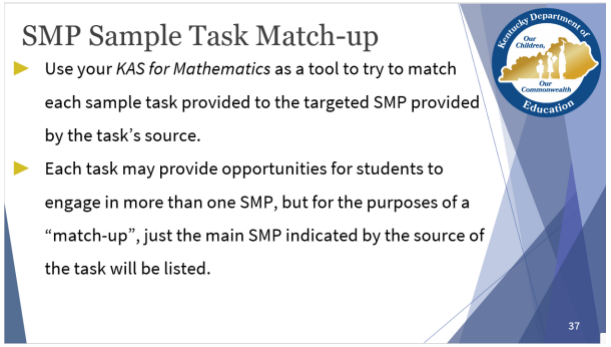
Facilitator Notes	Accompanying Slide(s)
● *How is engaging in this mathematical practice going to benefit your students? Consider also how engaging in this mathematical practice can benefit students in areas outside mathematics.* ● *Is there certain mathematical content that you feel lends itself nicely to a certain practice? Why will it be important that educators are intentional about providing opportunities to engage in the practices throughout the content instead of teaching them in isolated activities?* **Explain:** "A description of the SMPs can be found in the *KAS for Mathematics* beginning on p. 11. As we take a moment to investigate each practice, feel free to highlight or underline key ideas within each description that might be useful as you work to align instruction or assessments to the SMPs."	
Facilitate Discussion Around: MP.1. Make sense of problems and persevere in solving them.	

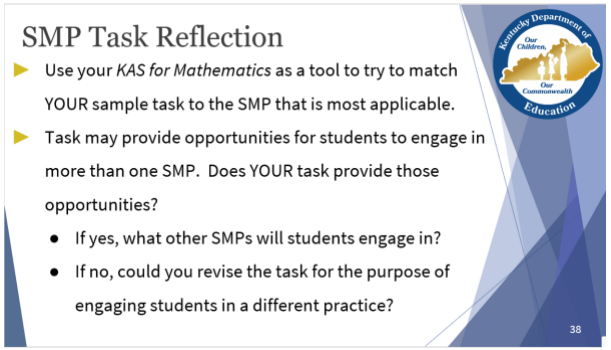
Facilitator Notes	Accompanying Slide(s)
Facilitate Discussion Around: MP.2. Reason abstractly and quantitatively.	
Facilitate Discussion Around: MP.3. Construct viable arguments and critique the reasoning of others.	
Facilitate Discussion Around: MP.4. Model with mathematics.	

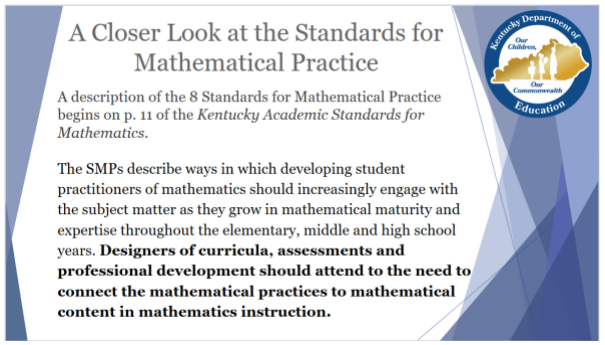
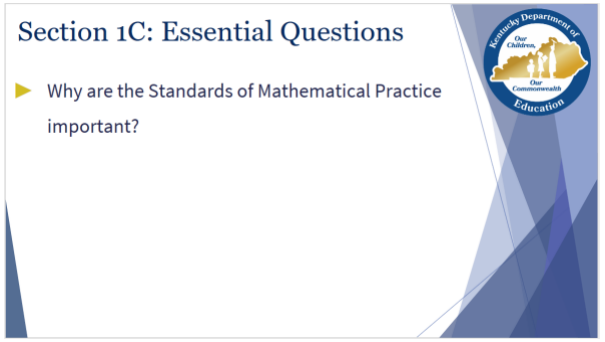
Facilitator Notes	Accompanying Slide(s)
Facilitate Discussion Around: MP.5. Use appropriate tools strategically.	
Facilitate Discussion Around: MP.6. Attend to precision.	
Facilitate Discussion Around: MP.7. Look for and make use of structure.	

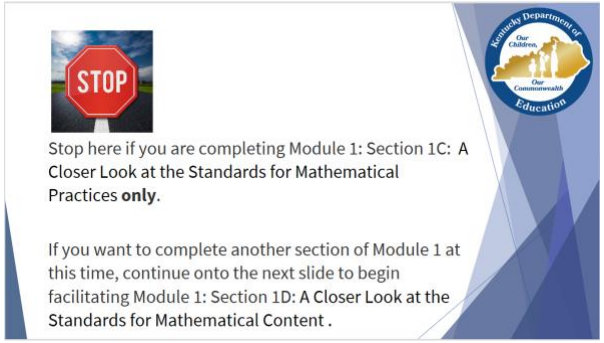
Facilitator Notes	Accompanying Slide(s)
Facilitate Discussion Around: MP.8. Look for and express regularity in repeated reasoning.	
Explain: "To encourage the relationship between the standards for mathematical practice and content standards, both the Advisory Panel (AP) and the Review and Assessment Development Committee (RDC) intentionally highlighted possible connections, as well as provided cluster level examples of what this relationship may look like for Kentucky students. The use of mathematical practices demonstrates various applications of the standards and encourages a deeper understanding of the content. Remember, there is a sample cluster-level layout with the key components labelled can be found on page 10 of the *KAS for Mathematics*."	
Discovery Task: Attending to the SMPs *Participants will need to be in grade level groups for this task. If participants are completing this section in isolation, the activity is still appropriate, but participants may take away more if given the opportunity to collaborate. This activity will encourage participants to explore the cluster level narratives of written in the Attending to the SMPs component for their grade level (or most applicable conceptual category for high school educators).* **Explain:** "To gain more familiarity and more thoroughly explore how the SMPs might be demonstrated within each cluster, you are going to be tasked with selecting the SMP that is described within the 'Attending to the Standards for Mathematical Practice' section of the standards. You may	

Facilitator Notes	Accompanying Slide(s)
use the SMP descriptions found beginning on page 11 of your standards but no sneaking around and looking into your grade level standards." *Distribute the appropriate grade-level (or conceptual category) documents for this activity. Allow participants to work (individually, in pairs, or in small groups) to select the SMP appropriate to the narratives at cluster level. Once participants have experienced this task, encourage them to see how closely their responses matched the KAS for Mathematics. As they go through this activity, encourage participants to take note of the instructional implications that come to mind. These notes will be great to revisit when participants are ready to consider what the next steps for implementing the KAS for Mathematics might be. Consider adding these ideas to a Google document to house these reflections for continued consideration and further application.*	
This may be a prime opportunity to give participants some time to consider the implications the SMPs should have on planning and implementing instruction. After completing the activity, have participants reflect upon: ● *How can having the Attending to the Mathematical Practices component within each cluster of the KAS for Mathematics provide direction to teachers when designing cohesive instruction?* ○ *Potential Talking Points:* *The purpose of this reflection question is to drive home the intention that instruction should be cohesive, with the mathematical practice standards and the mathematical content standards working in tandem to develop within students a balance of conceptual understanding, procedural fluency, and application around the big ideal within that cluster.* ● *What would be the value in reflecting upon current lessons, units, etc. to determine whether the instruction will address each of the eight SMPs?* ○ *Potential Talking Points:*	

Facilitator Notes	Accompanying Slide(s)
The purpose of this reflection question is to have participants reflect upon the value of developing within students the capacity for each of those practices. Do the student's experiences look different from in the past? How so? It will be important to note that the expectation is not that every lesson target every practice, but that educators are building opportunities for students to engage in every mathematical practice within every unit.	
Prior to the facilitation of the next activities, each participant should: ● *Select a task from your classroom instruction to bring to the next work session.*	***Suggested Break in Work Session***
Explain: "In the last work session you worked to identify cluster level connections between the content standards and the practice standards within the *KAS for Mathematics.* In order to relate the components provided in the *KAS for Mathematics* regarding SMPs to classroom instruction, you'll have the opportunity to examine sample tasks in order to identify which mathematical practice might be the most closely aligned to each task." *Pass out Participant Guides: SMP Sample Task Match-up. Participants can work as individuals, pairs, or small groups. Point out to participants that sometimes a task will address multiple SMPs, but that the source of the task most closely indicated one SMP for each. If participants indicate more than one SMP for each task as they work through, that is okay. Remember, this is part of a larger professional learning experience. This is not a summative assessment on SMP task alignment, but instead is meant to provide participants with additional experience using the components of the KAS for Mathematics.* *Once participants have completed the activity, facilitate group discussion around the provided matches. Understand that if participants don't select the indicated SMPs, it does not indicate their answer is incorrect, but instead perhaps they saw the task serving a different purpose or being facilitated another way. This provides an additional talking point regarding collaborating with other educators within PLCs to ensure the activities are common, but also key aspects about*	

Facilitator Notes	Accompanying Slide(s)
the implementation in the classroom, such as questioning, etc. Consider adding these ideas to a Google document to house these reflections for continued consideration and further application. This discussion will be a great reference for your participants in planning the next steps toward implementing the KAS for Mathematics in Section 1G. **NOTE: The link for each guide includes a key with a detailed rationale for each assignment at each level. There is also value in allowing teachers to see the facilitator's guide for all three levels at the conclusion of this discovery task.**	
When participants have completed the SMP Sample Task Match-up, have participants get out the task they brought to the work session. **Explain:** Every day around our state educators have to evaluate what instructional materials to employ to help students progress toward a specific goal. Now, take a moment to consider which Standard for Mathematical Practice YOUR task addresses. First, determine your targeted SMP. Then, if you remember, you began this module with the One + One = One exercise. By stretching your creativity in an attempt to create relationships between items that at first glance are not related, you generated something really unique and (potentially) innovative. *Provide a specific example from the One + One = One activity if needed to remind participants.* **Explain:** So, to engage in that practice again, could you adapt your current task to more closely target a different SMP, maybe one that you might not have considered originally, but could provide a really unique and (potentially) innovative experience for students? *Facilitate discussion around the task, the targeted SMP, and how the task could be adapted to engage students in a different practice. Allow participants to share as a whole group or have*	

Facilitator Notes	Accompanying Slide(s)
table level discussions.	
Bring participants back together. **Explain:** As we conclude our session about SMPs, it is CRITICAL that districts and schools understand that as the designers of curricula, assessments, and professional development, they should attend to the need to connect the mathematical practices to mathematical content in mathematical instruction. The two cannot be considered separately.	
Facilitate discussion around the essential question as needed. *Potential Talking Points:* *Attending to the SMPs will guide teachers to* ● *Provide opportunities for all students to cultivate reasoning and problem solving by allowing them to productively struggle* ● *Pose questions and problems that prompt students to explain their thinking about the content of the lesson* ● *Create conditions for student conversations about each other's thinking* *How can participants collaborate purposefully within their department/school/district to plan and design instruction that allows students to engage with the SMPs moving forward?*	

Facilitator Notes	Accompanying Slide(s)
Explain: "Coming Up Module 1: Section 1D will provide A Closer Look at the Standards for Mathematical Content." *If this is the end of your current work session, please consider asking participants to provide feedback on their experience so far with the module. These instructions will be provided at the end of each section to offer participants the opportunity to provide feedback that will be used by the KDE to plan and prepare future professional learning.* **Explain:** "The KDE needs your feedback on the effectiveness of this module, the learning platform and how the consultants may best support you as you take the next steps. We are going to complete a short survey to share our thinking and provide them with feedback on how the KDE can best meet our needs. Feedback from the surveys will be used by the KDE to plan and prepare future professional learning." *Provide participants with the following links:* • Module 1 Survey: https://www.surveymonkey.com/r/WDVSF6N • District/Administrator Module 1 Survey: https://www.surveymonkey.com/r/WD9THPG	 

Module 1: Getting to Know the *Kentucky Academic Standards (KAS) for Mathematics*

Preparation for Section 1D: A Closer Look at the Content Standards

Print Materials Needed:

As the facilitator you can print copies of the materials at the links provided or have participants print their own copies. If participants are responsible for printing their own copies, please specify that and provide necessary links within the invitation to the work session. Ensure that you have sufficient copies of the following documents within each work session.

- Section 1D: A Closer Look: Standards for Mathematical Content
  - Participant Guide: Connecting with the Content
    - Kindergarten: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_Kindergarten.pdf
    - First Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_First_Grade.pdf
    - Second Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_Second_Grade.pdf
    - Third Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_Third_Grade.pdf
    - Fourth Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_Fourth_Grade.pdf
    - Fifth Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_Fifth_Grade.pdf
    - Sixth Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_Sixth_Grade.pdf
    - Seventh Grade:

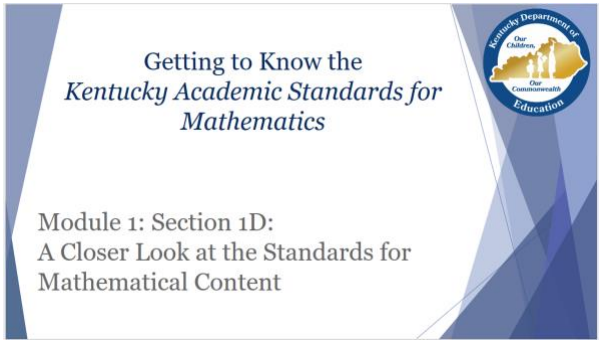
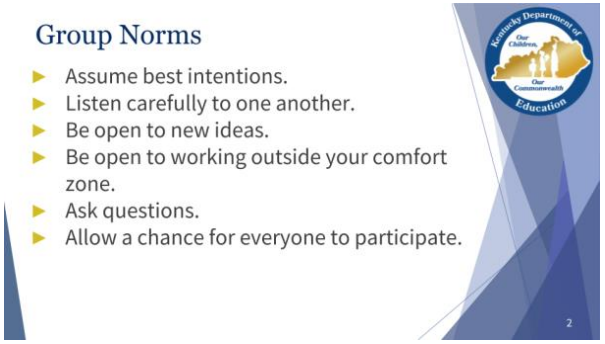
https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_Seventh_Grade.pdf

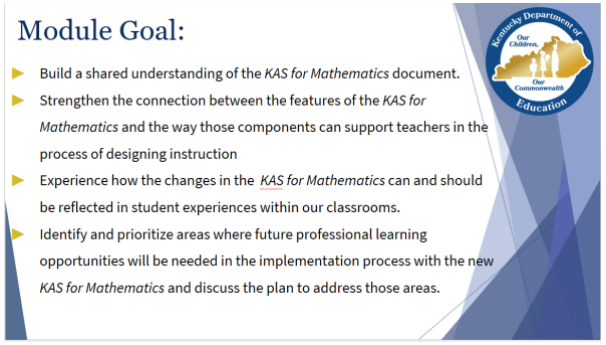
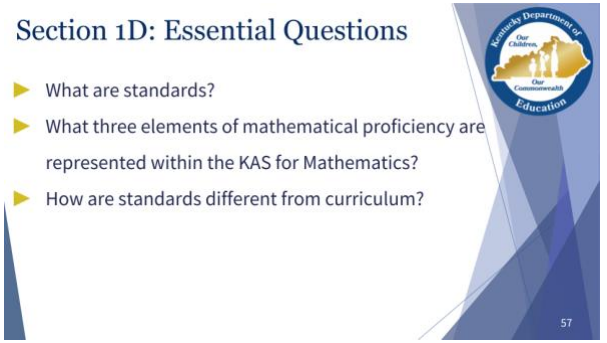
- Eighth Grade: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_Eighth_Grade.pdf
- High School Algebra: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_High_School_Algebra.pdf
- High School Functions: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_High_School_Functions.pdf
- High School Geometry: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_High_School_Geometry.pdf
- High School Statistics/Probability: https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Module_1_Section_1D_Content_Standards_Discovery_Activity_High_School_Statistics_and_Probability.pdf

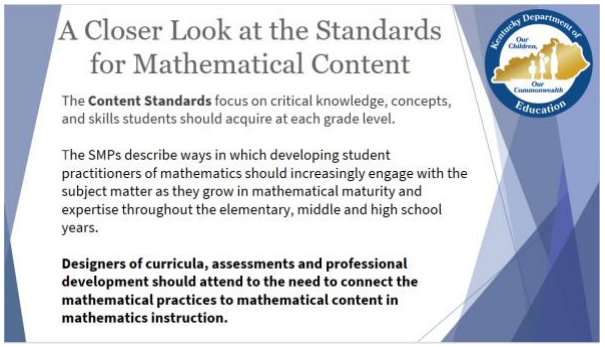
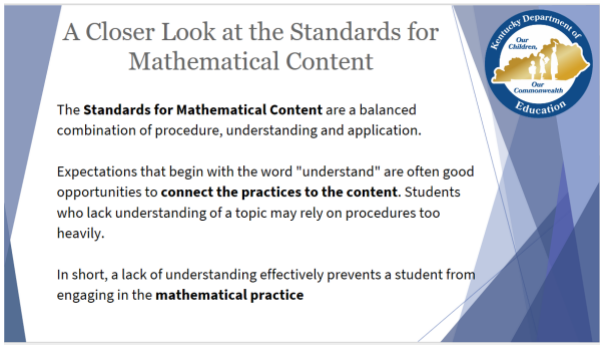
Posters to Make Ahead of Time:

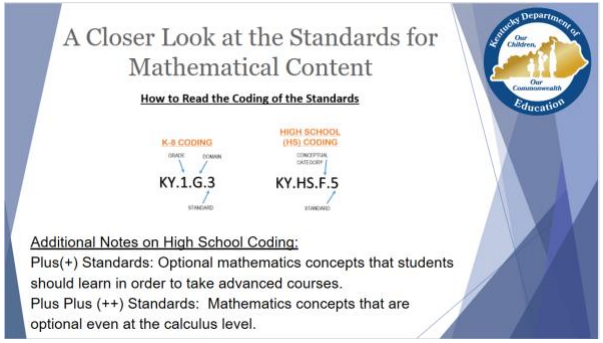
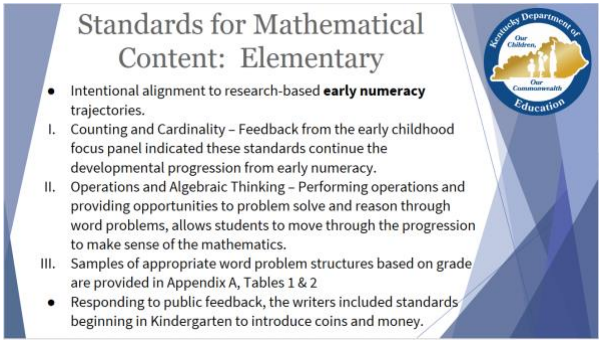
- Issues Bin Poster:
    - Poster can just be labeled “Issues Bin”. The Issues bins can be used by the participant to note ideas, questions, or issues constructively while the class continues to focus on an activity or lesson. This may be a poster or you may prefer to have a digital Issues Bin where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module.

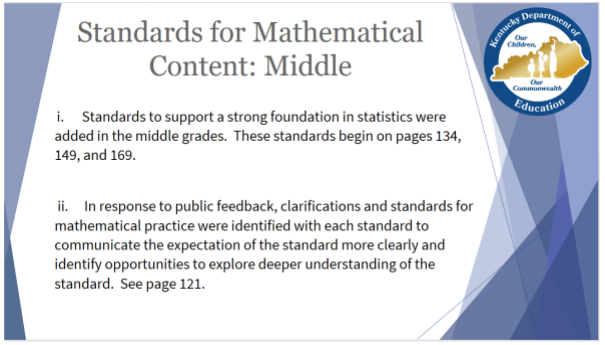
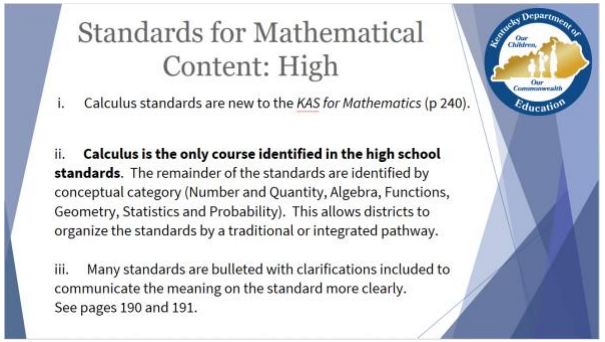
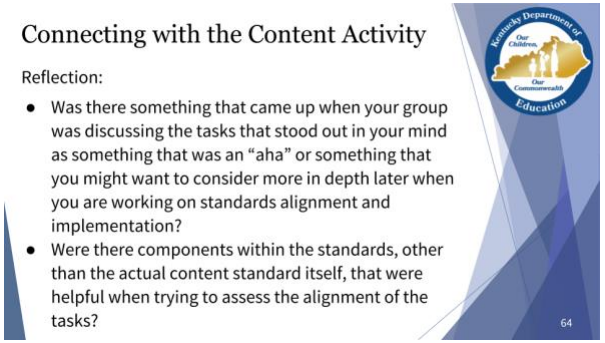
Section 1D: A Closer Look at the Standards for Mathematical Content

Facilitator Notes	Accompanying Slide(s)
If facilitating Section 1D at the same time as Section 1C... Explain: "Module 1 is intended to provide an introduction to the new *KAS for Mathematics*. Section 1D takes a closer look at the Standards for Mathematical Content." ***If facilitating Section 1D at a different time from Section 1C...*** *Officially welcome the participants. Introduce yourself (if necessary).*	
Explain: "Group norms can help to create a safe space where participants feel comfortable sharing their ideas and experiences. Take a moment to read the norms." *Discuss group norms.* ***NOTE: If participants made changes to this slide in the session within Section 1A, you will need to update this slide to reflect those changes moving forward.*** **Explain:** "I realize you may not want to pose every question to the whole group, or we may not have time in the session to get to every question. Therefore, I want us to have a place for to address those issues. *Introduce participants to the Issues Bin. The Issues bin can be used by the participant to note ideas, questions, or issues constructively while the other attendees continue to focus on an activity or lesson. This may be a poster or you may prefer to have a digital parking lot where*	

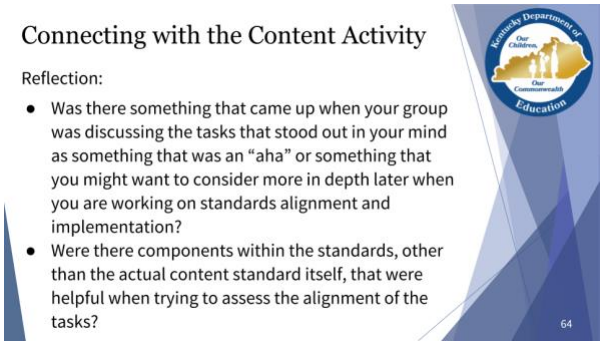
Facilitator Notes	Accompanying Slide(s)
participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module. The purpose of the Issues Bin is to provide participants with a safe way of asking questions or suggesting ideas. Participants should feel free to add to the Issues Bin throughout the module.	
Explain: "In this session, participants will look more closely at the Standards for Mathematical Content within the *KAS for Mathematics* and will recognize the intentional focus needed to ensure classroom instruction is aligned to the content standards." *Remember that you may not know all of the answers to the questions, and that is okay. Some issues may be answered in future sections of the modules or in the optional weekly webcasts for facilitators. If the question is pressing and doesn't appear to be addressed in the sections of Module 1, talk to your district team and determine who would be the best person to contact at the KDE. You may also email questions or feedback to standards@education.ky.gov.*	
Explain: "The K-12 mathematics standards were designed for students to become mathematically proficient. In this section you'll get more information on the content standards and the role they should play in designing curriculum."	

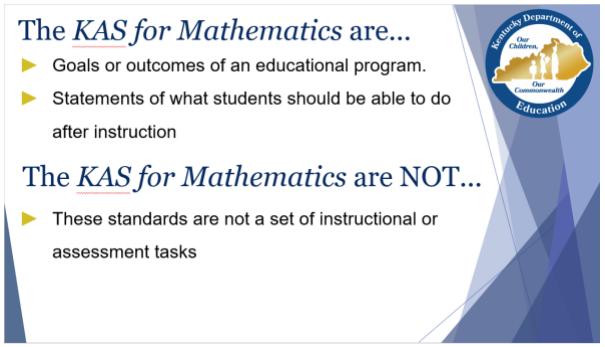
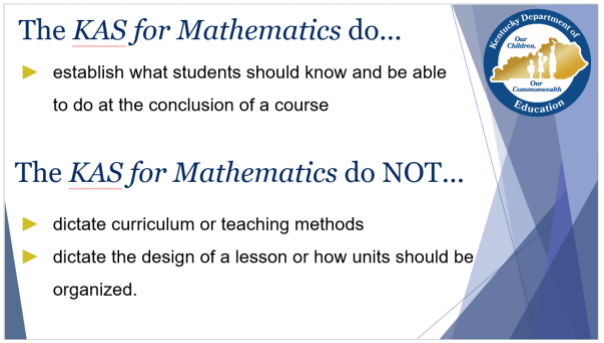
Facilitator Notes	Accompanying Slide(s)
At this point, participants will need to develop an understanding of the differences between content standards and practice standards and how students benefit when they experience learning opportunities that integrate both. **Explain:** "In general (1) The content standards are statements of what students should be able to do after instruction. (2) The practice standards are additional standard that are taught in conjunction with the content standards to facilitate depth of content knowledge."	
Explain: " The content standards emphasize reaching proficiency in mathematics through a balance of 1. Procedural skill and fluency 2. Conceptual Understanding 3. Application Students should develop procedural skill and fluency **building from** conceptual understandings **to** application and modeling with mathematics, in order to solve real world problems. Engaging with the practices while developing a knowledge of the content will be critical to students reaching mathematical proficiency. Without a flexible base from which to work, students may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview or deviate from a known procedure to find a shortcut."	

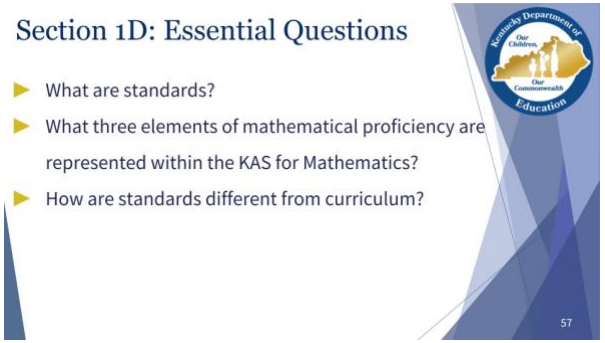
Facilitator Notes	Accompanying Slide(s)
Explain: "Elementary and middle schools (K-8) did not have conceptual categories, so the coding is very similar to previous standards. The main change in coding is within the high school standards. Previous state standards had each conceptual category broken down into multiple subgroups. For example, the conceptual category of Algebra had four domains that were all an additional part of the coding. ● Seeing Structure in Expressions (A-SSE) ● Arithmetic with Polynomials and Rational Expressions (A-APR) ● Creating Equations (A-CED) ● Reasoning with Equations and Inequalities (A-REI) The writers of the *KAS for Mathematics* felt like it would be more clear and concise to only distinguish in the coding by conceptual category. Within the *KAS for Mathematics,* every standard within the conceptual category of Algebra will be labeled 'KY.HS.A.' followed by the number of the standard. The standards are still grouped by common domain and the domain is still labeled along top of each cluster in the document, but the domain is not also indicated within the coding of the standard."	
If facilitating a group interested in the changes to ***elementary school content,*** *this slide, which highlights some of the key shifts within the KAS for Mathematics, will be of particular interest to them. If facilitating a group with little interest in the changes to elementary school content, you might want to move on to the next slide.*	

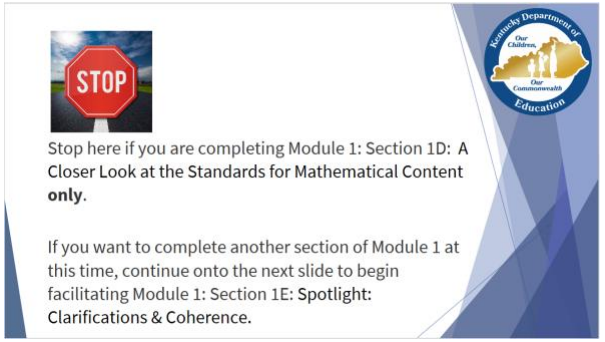
Facilitator Notes	Accompanying Slide(s)
*If facilitating a group interested in the changes to **middle grades content**, this slide, which highlights some of the key shifts within the KAS for Mathematics, will be of particular interest to them. If facilitating a group with little interest in the changes to middle grades content, you might want to move on to the next slide.*	
*If facilitating a group interested in the changes to **high school content**, this slide, which highlights some of the key shifts within the KAS for Mathematics, will be of particular interest to them. If facilitating a group with little interest in the changes to high school content, you might want to move on to the next slide.*	
Discovery Task: Connecting with the Content *Pass out the Participant Guide: Connecting with the Content.* **Explain:** "Now it is time to take a moment to familiarize yourself with the content standards for your grade level (or conceptual category for high school participants). You're going to receive a set of three tasks to review. For each task, your goal is to determine which of the KAS for Mathematics the task is aligned to and how closely the task aligns to the standard. In Section 1B of Module 1, we looked at the grade-level (or conceptual category) overviews. Starting with the relevant grade level (or conceptual category) overviews to determine which cluster the task would align with may provide direction as to which standards might warrant a closer investigation. As you	

Facilitator Notes	Accompanying Slide(s)
complete this task, take note of any instructional implications that come to mind that you may want to keep in mind when considering the next steps for implementation of the *KAS for Mathematics*." *You may elect to have them work individually, with a partner or in a small grade-level group. Keep in mind, though, that because this is new learning, they will likely benefit from being able to share their thinking in a group of 3-4 participants.* *Optional: If participants have completed Section 1C of Module 1, you could have them select the targeted SMP for each task as well.* Note: It is **CRITICAL** that facilitators reinforce that the **TASKS** need to be analyzed to determine what mathematical practice students are asked to engage in. Participants **SHOULD NOT** simply list the mathematical practices written with the standard. Remember from Section 1C, those mathematical practices were tagged simply to guide educators in considering how to integrate the practices with the content. Those tagged practices do not represent the only way or the expected way that content standard should be taught. **NOTE: The link for each guide includes a key with a detailed rationale for each assignment at each level. There is also value in allowing teachers to see the facilitator's guide for all three levels at the conclusion of this discovery task.**	

Facilitator Notes	Accompanying Slide(s)
Bring the participants back together. *Facilitate discussion around the activity as needed.* *Potential Talking Points:* ● *Was there something that came up when your group was discussing the tasks that stood out in your mind as something that was an "aha" or something that you might want to consider more in depth later when you are working on standards alignment and implementation?* ○ *The facilitator's guide may reference prior standards that would have been taught to build the foundation for the targeted standard and specifically point out what that standard requires that makes it an extension of the previous grade level. How often do the participants use prior learning targets to ensure that their instruction and assessment is grade-appropriate? If your participants express a need in that area, please let them know they will gain more understanding regarding the information in the "Coherence" component in Section 1E.* ○ *Have the participants reflect on some of their own tasks and consider for themselves how their own instruction would measure up within a tool like this. This leads into the Critical Extension listed below.* ● *Were there components within the standards, other than the actual content standard itself, which were helpful when trying to assess the alignment of the tasks?* ○ *Did participants use the grade level overviews to determine which cluster the task addressed?* ○ *Did participants use the Clarifications component to provide additional understanding? If so, please let participants know they will gain more understanding regarding the information in the "Clarifications" component in Section 1E.*	

Facilitator Notes	Accompanying Slide(s)
Critical Extension**: Participants could extend this learning by analyzing one of their own lesson plans for the degree of alignment. If participants felt comfortable, they could even switch lesson plans/tasks and determine the degree of alignment for a partner's lesson or task and provide a rationale. **NOTE: Depending upon the time available for the session, this extension might need to be done at the next work session or as "homework" to be completed and shared at the next work session. *Consider adding these ideas to a Google document to house these reflections for continued consideration and further application. This discussion will be a great reference for your participants in planning the next steps toward implementing the KAS for Mathematics in Section 1G.*	
Explain: "On pages 8 and 9 of the *KAS for Mathematics*, there is an important distinction regarding what the standards are, and just as importantly, what the standards are not.	
Explain: "The standards are not the curriculum. Learning opportunities and pathways will continue to vary across schools and school systems and educators should make every effort to meet the needs of individual students, based on their pedagogical and professional impressions and information. The order in which the standards are presented is not the order in which the standards need to be taught. Standards from various domains are connected and educators will need to determine the best overall design and approach, as well as the instructional strategies needed to support their learners to attain grade-level expectations and the knowledge articulated in the standards.	

Facilitator Notes	Accompanying Slide(s)
The instructional program should emphasize the development of students' abilities to acquire and apply the standards. The curriculum must assure appropriate accommodations are made for diverse populations of students found within Kentucky schools. Decisions on how best to help students meet these program goals are left to local school districts and teachers. **However, it is CRITICAL that curriculum is aligned to the standards."**	
Facilitate discussion around the essential questions as needed. *Potential talking points:* ● *Standards are what students should know and be able to do after instruction.* ● *The KAS for Mathematics represent a balance of procedural skill and fluency, conceptual understanding, and application. Participants may be able to share something they noticed about one of these three elements throughout their discovery task.* ● *Standards are not curriculum. The state of KY has a common set of standard, but local districts can determine the curriculum. The curriculum must be aligned to the standards.*	
Explain: "Coming Up Module 1: Section 1E will provide a "Spotlight" on the Clarifications and Coherence components." *If this is the end of your current work session, please consider asking participants to provide feedback on their experience so far with the module. These instructions will be provided at the end of each section to offer participants the opportunity to provide feedback that will be used by the KDE to plan and prepare future professional learning.* **Explain:** "The KDE needs your feedback on the effectiveness of this module, the learning platform and how the consultants may best support you as you take the next steps. We are going to complete a short survey to share our thinking and provide them with feedback on how the KDE can best	

Facilitator Notes	Accompanying Slide(s)
meet our needs. Feedback from the surveys will be used by the KDE to plan and prepare future professional learning." *Provide participants with the following links:* • Module 1 Survey: https://www.surveymonkey.com/r/WDVSF6N • District/Administrator Module 1 Survey: https://www.surveymonkey.com/r/WD9THPG	

Module 1: Getting to Know the *Kentucky Academic Standards (KAS) for Mathematics*

Preparation for Section 1E: Spotlight: Clarifications & Coherence

Print Materials Needed:

As the facilitator you can print copies of the materials at the links provided or have participants print their own copies. If participants are responsible for printing their own copies, please specify that and provide necessary links within the invitation to the work session. Ensure that you have sufficient copies of the following documents within each work session.

- Section 1E: Spotlight: Clarifications and Coherence
  - Participant Guide: Coherence Card Sort
    Note: The cards will need to be printed and cut out prior to this session
    - K-8 Geometry:
      https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Grades_K-8_Domain_Geometry_Card_Sort.pdf
    - K-8 Measurement and Data:
      https://education.ky.gov/curriculum/standards/kyacadstand/Documents/K-8_Measurement_and_Data_Coherence_Card_Sort.pdf
    - K-8 Number & Operations Base Ten, Number & Operations Functions and Ratio & Proportion
      https://education.ky.gov/curriculum/standards/kyacadstand/Documents/K-8_Domain_NBT_NF_RP_Coherence_Card_Sort.pdf
    - K-8 Operations and Algebraic Thinking:
      https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Grades_K-8_Domain_Operations_and_Algebraic_Thinking_Card_Sort.pdf

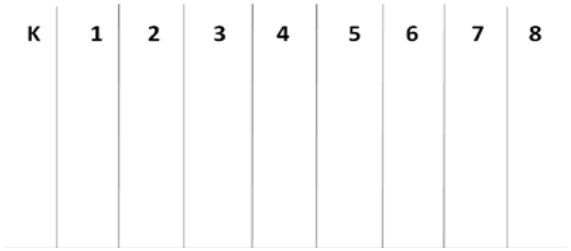
- High School Algebra
  https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Algebra_Coherence_Card_Sort.pdf
- High School Functions
  https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Functions_Coherence_Card_Sort.pdf
- High School Geometry
  https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Geometry_Coherence_Card_Sort.pdf
- High School Number & Quantity
  https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Number_Quantity_Coherence_Card_Sorts.pdf
- High School Statistics & Probability
  https://education.ky.gov/curriculum/standards/kyacadstand/Documents/HS_Statistics_and_Probability_Coherence_Card_Sort.pdf

Posters to Make Ahead of Time:

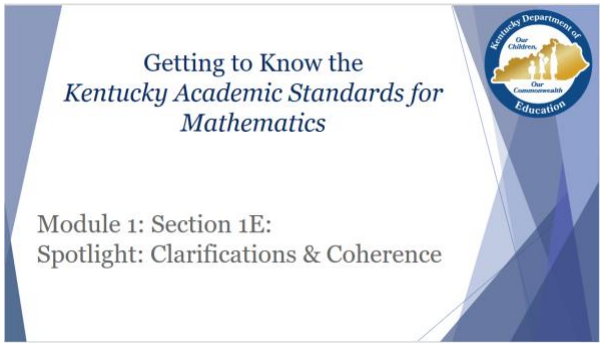
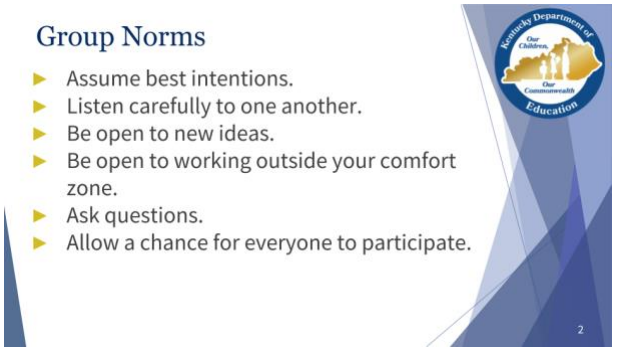
- Issues Bin Poster:
  - Poster can just be labeled “Issues Bin”. The Issues bins can be used by the participant to note ideas, questions, or issues constructively while the class continues to focus on an activity or lesson. This may be a poster or you may prefer to have a digital Issues Bin where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module.

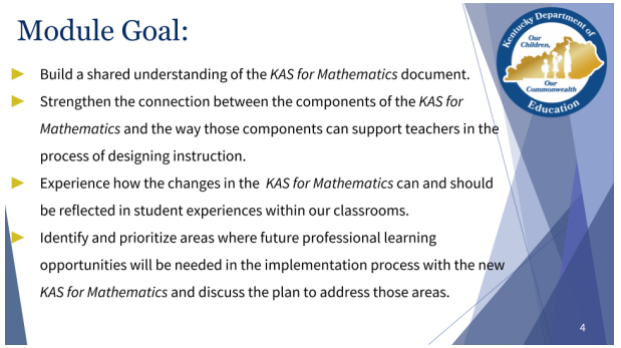
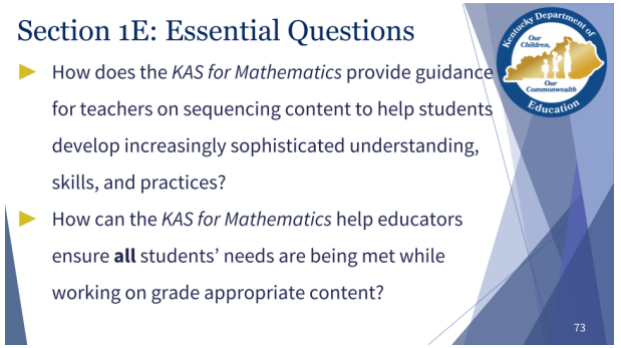
- Coherence Card Sort Activity

  Each group will need one large poster with individual columns for Kindergarten through 12th grade, written or printed like the one pictured below.

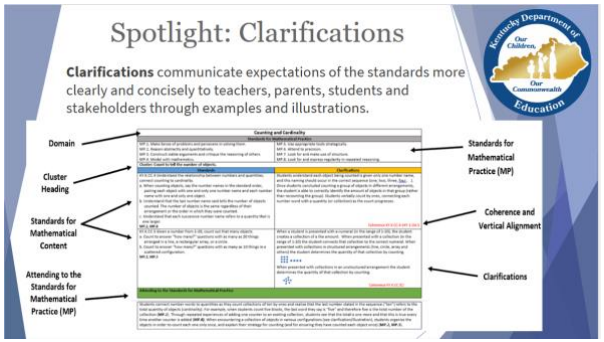


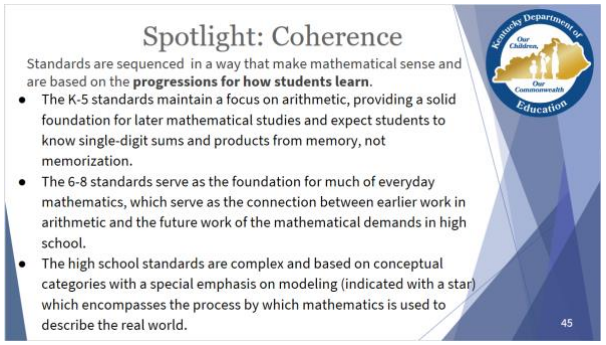
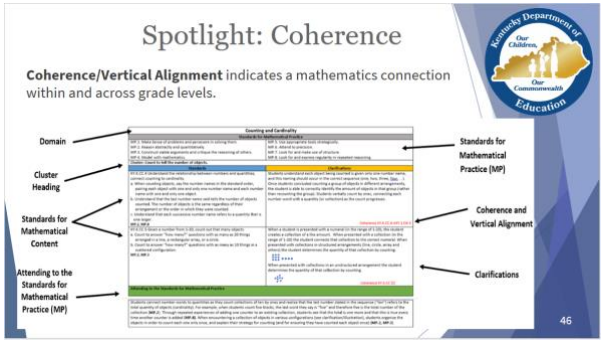
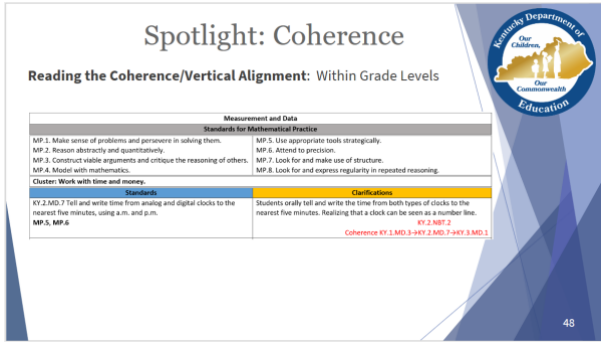
Section 1E: Spotlight: Clarifications and Coherence

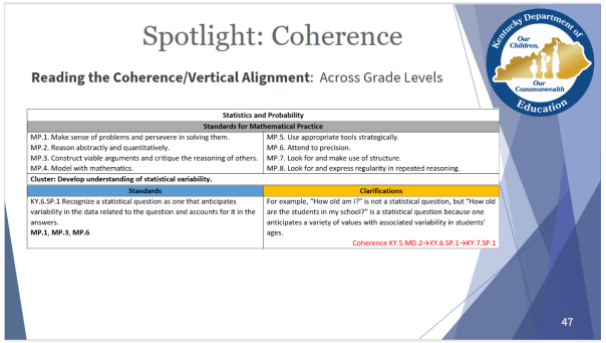
Facilitator Notes	Accompanying Slide(s)
If facilitating Section 1E at the same time as Section 1D... Explain: "Module 1 is intended to provide an introduction to the new *KAS for Mathematics*. Section 1E focuses on Clarifications & Coherence." ***If facilitating Section 1E at a different time from Section 1D...*** *Officially welcome the participants. Introduce yourself (if necessary).*	
Explain: "Group norms can help to create a safe space where participants feel comfortable sharing their ideas and experiences. Take a moment to read the norms." *Discuss group norms.* ***NOTE: If participants made changes to this slide in the session within Section 1A, you will need to update this slide to reflect those changes moving forward.*** **Explain:** "I realize you may not want to pose every question to the whole group, or we may not have time in the session to get to every question. Therefore, I want us to have a place for to address those issues." *Introduce participants to the Issues Bin. The Issues bin can be used by the participant to note ideas, questions, or issues constructively while the other attendees continue to focus on an activity or lesson. This may be a poster or you may prefer to have a digital parking lot where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module. The purpose of the Issues*	

Facilitator Notes	Accompanying Slide(s)
Bin is to provide participants with a safe way of asking questions or suggesting ideas. Participants should feel free to add to the Issues Bin throughout the module.	
Explain: "Teachers must have a clear vision of the goals of instruction and what proficiency means for the specific mathematical content they are teaching. They need to know the mathematics they teach as well as the horizons of that mathematics—where it can lead and where their students are headed with it.[1] In this session, participants will look more closely at the Clarification and Coherence components within the *KAS for Mathematics* and will recognize the intentional supports given by these components to ensure classroom instruction is aligned to the content standards." *Remember that you may not know all of the answers to the questions, and that is okay. Some issues may be answered in future sections of the modules or in the optional weekly webcasts for facilitators. If the question is pressing and doesn't appear to be addressed in the sections of Module 1, talk to your district team and determine who would be the best person to contact at the KDE. You may also email questions or feedback to standards@education.ky.gov.*	
Explain: "The standards emphasize **procedural skill and fluency**, building from **conceptual understandings** to **application and modeling** with mathematics, in order to solve real world problems. The writing committees worked hard to enhance the standards' clarity and function so Kentucky teachers would be better equipped to provide high quality mathematics for each and every student. In this section of Module 1, we are going to focus on two of the components embedded within the standards, Clarifications and Coherence, and how those components will support teachers in the process of designing instruction.	

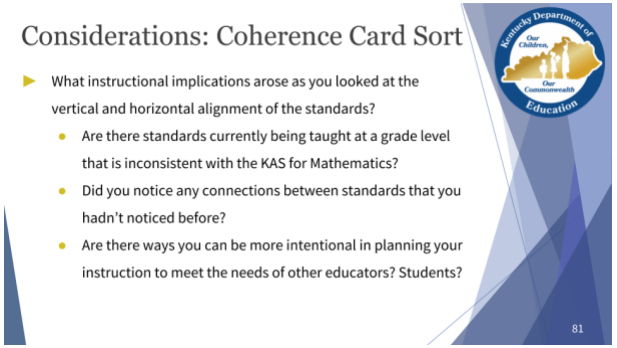
[1] 10 DEVELOPING PROFICIENCY IN TEACHING MATHEMATICS." National Research Council. 2001. *Adding It Up: Helping Children Learn Mathematics*. Washington, DC: The National Academies Press. doi: 10.17226/9822.

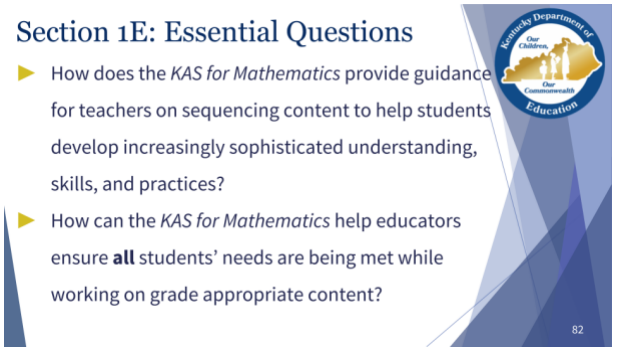
Facilitator Notes	Accompanying Slide(s)
Explain: "Both the AP and RDC committees decided to incorporate the clarifications section to communicate expectations more clearly and concisely to teachers, parents, students and stakeholders through examples and illustrations. Additionally, there were occasions when public feedback indicated the need for clarifying the intent of the standard. However, the writers also had to be very intentional when choosing what to include within the clarifications section. Since curriculum is a local decision, the writers could not include too many examples for fear of infringing upon the autonomy of districts. It's a mathematical parallel of Goldilocks' paradox. The end result which appears in the *KAS for Mathematics* is the balance between 'too little information', which might leave reader with questions, and 'too much information', which might take flexibility from districts. The resulting document is 'just right', a high quality set of mathematics standards to enable graduates to live, compete and succeed in life beyond K-12 education."	
If possible, allow participants a moment to look through their standards documents with specific focus on how the Clarifications might useful within their own practice. Is there a particular Clarification statement they noticed that might be valuable to themselves or another stakeholder? One I took note of is KY.5.G.4 Classify two-dimensional figures in a hierarchy based on properties. The Clarifications in this standard provide a reader with background on shapes students should be familiar with and particular properties that may be of note. *Facilitate discussion around this or allow participants to share in small groups. This might be a great opportunity for a Think-Pair-Share.* ***T:** (Think) Begin by asking a specific question and allow participants to "think" about what they know or have learned about the topic.* ***P**: (Pair) Each participant should be paired with another participant or a small group.* ***S**: (Share) Participants share their thinking with their partner. The facilitator can then expand the "share" into a whole-class discussion.*	

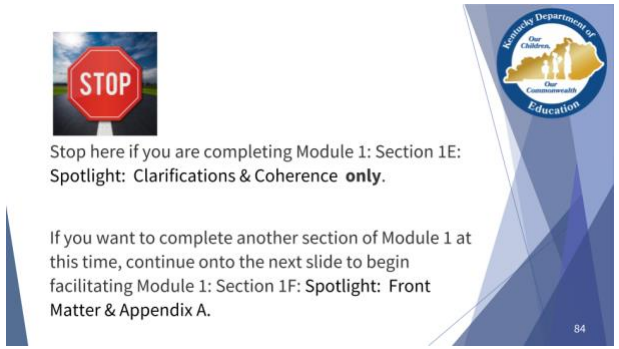
Facilitator Notes	Accompanying Slide(s)
Explain: "Coherence is about math making sense. The standards are sequenced in a way that make mathematical sense and are based on the progressions for how students learn. On p. 6 of the *KAS for Mathematics*, more information is given about the background for the coherence work within early numeracy. Early numeracy trajectories provide mathematical goals for students based on research through problem solving, reasoning, representing and communicating mathematical ideas. Students move through these progressions in order to view mathematics as sensible, useful and worthwhile to view themselves as capable of thinking mathematically."	
Explain: "To emphasize the cohesiveness of the K-12 standards, both committees decided to include Coherence/Vertical Alignment indicating a mathematics connection within and across grade levels. Using research from other state architectures, the writing team included the coherence within the clarification section by identifying the standard codes printed in red."	
Explain: "The current standard is listed in red with previous grade level standards to the left and future grade level standards to the right. Notice that coherence within grade levels is indicated by the stacked standards. You will see coherence within a grade as you see the meaningful introduction to topics in the same grade that complement each other."	

Facilitator Notes	Accompanying Slide(s)
Explain: "You will see coherence across grades as when students are expected to apply learning from a previous grade to learn a new topic. Notice that coherence across grade levels is indicated by the string of standard indicating what learning is needed from a previous grade/course, what is currently being learned, and then on to what is next. At the end of each cluster in the *KAS for Mathematics* is the statement, 'The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.' Remember, practicing classroom teachers were the writers of the standards. As such, the writers did not intend for the Coherence/Vertical Alignment component to be restricting because so much of mathematics is interconnected. Instead, the listing in this component was included to support teachers and provide some guidance for planning and designing instruction."	
Discovery Task: Coherence Card Sort *Pass out the Participant Materials for the Coherence Card Sort.* *This activity gets educators involved in uncovering some of the thoughtful progressions within the KAS for Mathematics while also helping them familiarize themselves with grade appropriate standards. Participation in this activity makes vivid the concept of coherence across grades and within grades. It is recommended that participants get to explore the entirety of the standards progression from K-12, however, there may not be enough time within a work session for that to happen. It is recommended that participants begin with the Geometry Cards as that area progresses from K-High school and would provide opportunities for engagement among educators at all levels.* *Grade Level Modification: If the activity needs to be shortened, the recommendation is that educators within grades K-8 complete the card sorts labeled specifically with that distinction and the high school educators complete the card sorts labeled specifically with that distinction.*	

Facilitator Notes	Accompanying Slide(s)
Time Modification: Have participants look at the standards appropriate to their grade level to identify standards with which they (or students) tend to struggle. Use the Coherence component to trace that standard to previous content and future content. Look at the connections within and across grade levels for that specific standard. Collaborate as a department/school/district to create a plan for additional support as this standard progresses. **Explain:** "You will receive a set of cards and a large poster. Your goal as a team is to correctly place the cards within each grade in an accurate progression. ● You may not use your standards during the activity - only at the very end to check your team's work. ● It may be helpful to first identify the theme for each set of cards, so that you collectively understand each strand that you are working with. ● The objective is to see how topics and themes within the *KAS for Mathematics* progress vertically and horizontally. Use the wording of the standards on each card as an indicator of which standard would be placed before or after another standard within the same progression and within the same grade level. For the coherence activity, we really want you to dig into multiple standards. There are so many examples of coherence in the standards, just looking deeply at one of them is not enough. The key is to read the standards on the cards. This isn't an activity to just see if you know the standards for each grade or can reason the order they should go in. Rather, it is a time for you to really read the standards. Take notice of the coherence of the writing. Pay attention to how the topics progress from one grade to another. See why it is important for educators to know the standards for their grade as well as for the grades before and after theirs. This activity is most beneficial when not using the standards as a guide. We want you to have to mull over these standards and hash out tough decisions with your colleagues. Consider this an opportunity to engage in MP.1 ourselves and demonstrate perseverance. When you are finished and	

Facilitator Notes	Accompanying Slide(s)
comfortable with your choices, use the *KAS for Mathematics* to check your work." *Encourage teams to get up around the poster board together as they experiment with ordering the cards and placing them in different grades. As participants begin their discussion, facilitators should walk around to different groups and observe. If a team seems stuck, ask them which standards they are specifically struggling with and read them aloud, or ask the participants to read them aloud. Continuously draw the team back to individual word choices, which will help them understand why one standard would be before or after another.* *Important note: For participants at the high school level, where courses are not defined by grade level, they may choose to call 9th grade (Algebra 1, Integrated Math 1, or whatever course the majority of 9th graders take for them) and 10th grade (Geometry, Integrated Math 2, etc.) to make the activity more meaningful. With proposed changes to graduation requirements, educators at this level may use this activity to help them determine which standards are going to be taught at the 9th and 10th grade levels and then consider how the remaining standards will be taught to all students.* *This is adapted from the work within the Coherence Card Sort developed by Student Achievement Partners.*	
It is ESSENTIAL to have discussions about the connections that relate standards within and across grade levels and how they are integrated into the KAS for Mathematics. If the activity is only left as a card sort without any discussion, it loses its impact. ***Curriculum is a local decision, but this may provide some thoughtful results that may need to be considered at the local level in that decision making process.*** *Facilitate discussion around this activity.*	

Facilitator Notes	Accompanying Slide(s)
Facilitate discussion around the essential questions if needed. *Potential talking points:* ● *How does the KAS for Mathematics provide guidance for teachers on sequencing content to help students develop increasingly sophisticated understanding, skills, and practices?* ○ *The Coherence components should help guide teachers when determining what standards students might need additional support with if they are struggling to understand certain content. Additionally, it could provide teachers directions for how to provide extension opportunities for students who are ready to move forward by showing the upcoming connections within the standards.* ● *How can the KAS for Mathematics help educators ensure all students' needs are being met while working on grade appropriate content?* ○ *Did participants find evidence that there are standards currently being taught outside of the grade appropriate expectation? If so, how might that be addressed when planning and designing instruction for implementing the KAS for Mathematics?* ○ *What is the value of exposing students to grade appropriate content?* *Consider adding these ideas to a Google document to house these reflections for continued consideration and further application. This discussion will be a great reference for your participants in planning the next steps toward implementing the KAS for Mathematics in Section 1G.*	

Facilitator Notes	Accompanying Slide(s)
Explain: "Coming Up Module 1: Section 1F will provide a "Spotlight" on the resources found in the Front Matter and the Appendices." *If this is the end of your current work session, please consider asking participants to provide feedback on their experience so far with the module. These instructions will be provided at the end of each section to offer participants the opportunity to provide feedback that will be used by the KDE to plan and prepare future professional learning.* **Explain:** "The KDE needs your feedback on the effectiveness of this module, the learning platform and how the consultants may best support you as you take the next steps. We are going to complete a short survey to share our thinking and provide them with feedback on how the KDE can best meet our needs. Feedback from the surveys will be used by the KDE to plan and prepare future professional learning." *Provide participants with the following links:* • Module 1 Survey: https://www.surveymonkey.com/r/WDVSF6N • District/Administrator Module 1 Survey: https://www.surveymonkey.com/r/WD9THPG	 

Module 1: Getting to Know the *Kentucky Academic Standards (KAS) for Mathematics*

Preparation for Section 1F: Spotlight: Front Matter & Appendix A

Print Materials Needed:

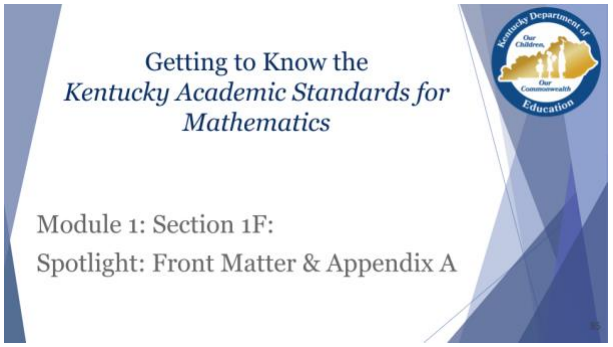
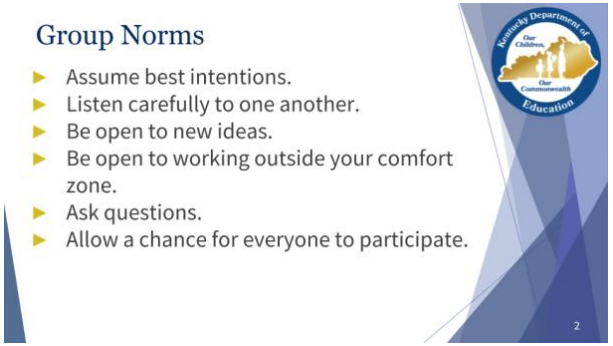
As the facilitator you can print copies of the materials at the links provided or have participants print their own copies. If participants are responsible for printing their own copies, please specify that and provide necessary links within the invitation to the work session. Ensure that you have sufficient copies of the following documents within each work session.

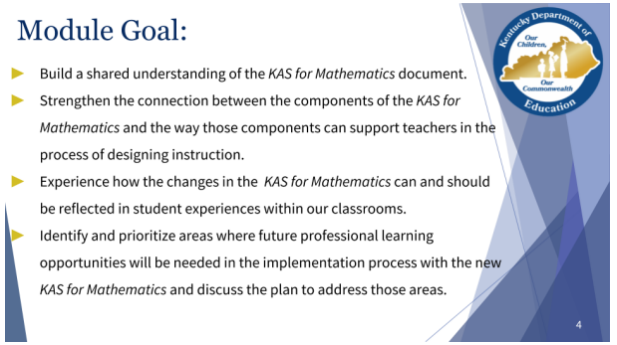
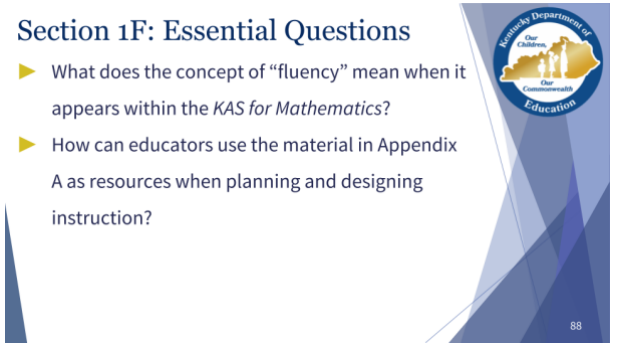
- Section 1F: Spotlight: Front Matter and the Appendices
    - No print materials needed

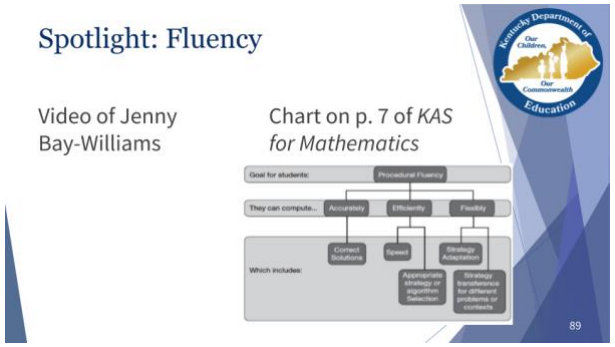
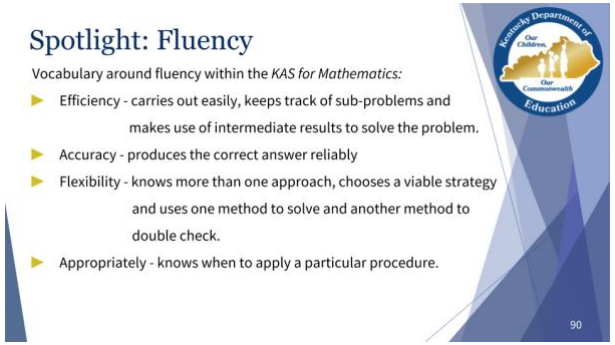
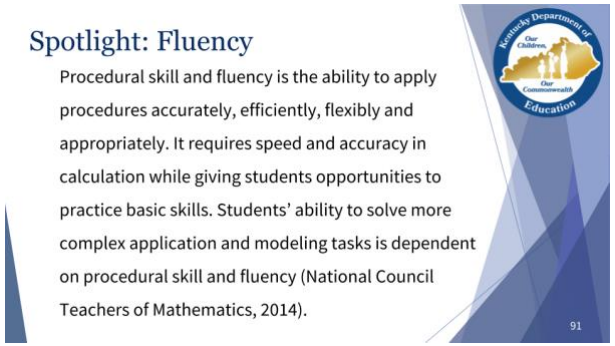
Posters to Make Ahead of Time:

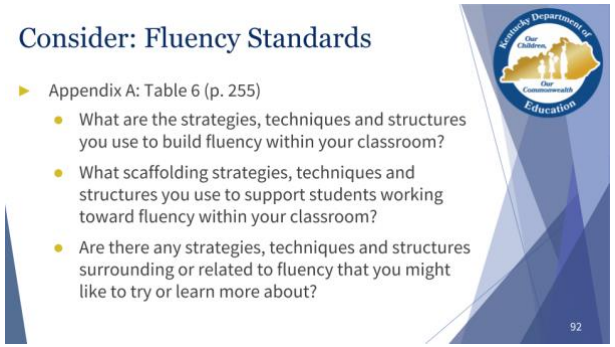
- Issues Bin Poster:
    - Poster can just be labeled “Issues Bin”. The Issues bins can be used by the participant to note ideas, questions, or issues constructively while the class continues to focus on an activity or lesson. This may be a poster or you may prefer to have a digital Issues Bin where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module.

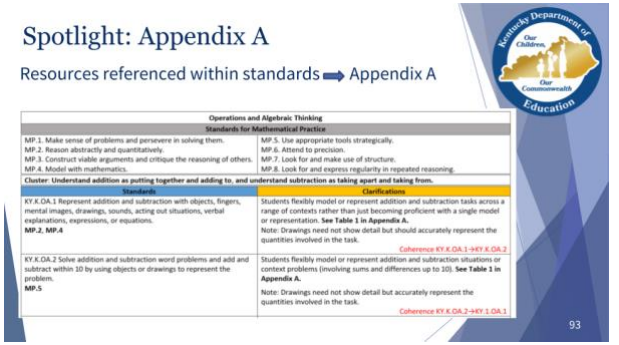
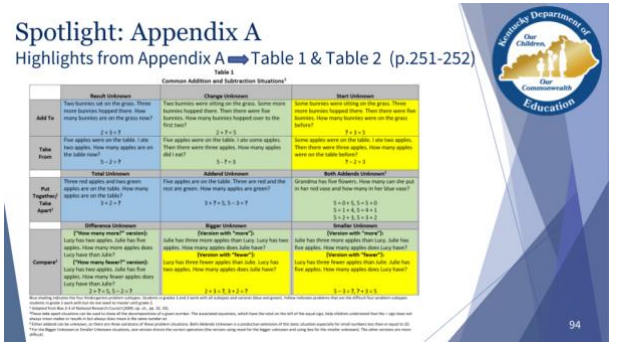
Section 1F: Spotlight: Front Matter and Appendix A

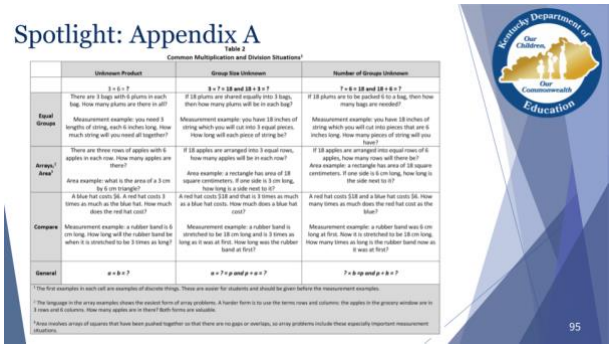
Facilitator Notes	Accompanying Slide(s)
If facilitating Section 1F at the same time as Section 1E... Explain: "Module 1 is intended to provide an introduction to the new *KAS for Mathematics*. Section 1F shines a spotlight on the Front Matter and the Appendices." ***If facilitating Section 1F at a different time from Section 1E...*** *Officially welcome the participants. Introduce yourself (if necessary).*	
Explain: "Group norms can help to create a safe space where participants feel comfortable sharing their ideas and experiences. Take a moment to read the norms." ***NOTE: If participants made changes to this slide in the session within Section 1A, you will need to update this slide to reflect those changes moving forward.*** **Explain:** "I realize you may not want to pose every question to the whole group, or we may not have time in the session to get to every question. Therefore, I want us to have a place for to address those issues. *Introduce participants to the Issues Bin. The Issues bin can be used by the participant to note ideas, questions, or issues constructively while the other attendees continue to focus on an activity or lesson. This may be a poster or you may prefer to have a digital parking lot where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module. The purpose of the Issues Bin*	

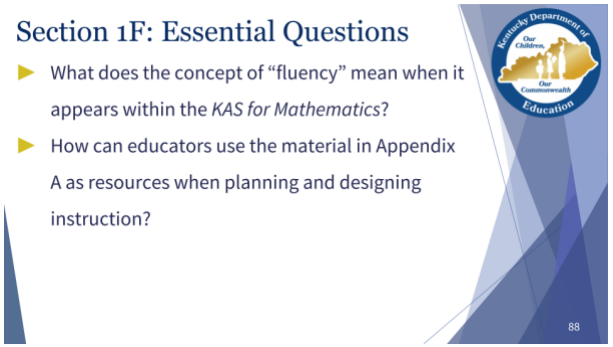
Facilitator Notes	Accompanying Slide(s)
is to provide participants with a safe way of asking questions or suggesting ideas. Participants should feel free to add to the Issues Bin throughout the module.	
Explain: "In this session, participants will look more closely at the front matter and Appendices within the *KAS for Mathematics* and will recognize the intentional supports given by these components to ensure classroom instruction is aligned to the content standards." *Remember that you may not know all of the answers to the questions, and that is okay. Some issues may be answered in future sections of the modules or in the optional weekly webcasts for facilitators. If the question is pressing and doesn't appear to be addressed in the sections of Module 1, talk to your district team and determine who would be the best person to contact at the KDE. You may also email questions or feedback to standards@education.ky.gov.*	
Have participants take a self-sticking note and ask them to write down how they would define fluency in mathematics. Give participants a moment to think and write. **Explain:** "Take a moment to share to compare your definition with the people around you." *Allow time for this then bring the group back together.* **Explain:** "The *KAS for Mathematics* reflect a balance of 1. Procedural Skill & Fluency 2. Conceptual Understanding 3. Application When you do a Google search of the 'definition of fluency in mathematic', in less than a second	

Facilitator Notes	Accompanying Slide(s)
you'll get a little over 1.7 million results. The idea of 'fluency' is often misunderstood. Moving forward, it is important that we have a shared understanding of what 'fluency' will refer to in the KAS for Mathematics."	
*This slide has an embedded video. If you are unable to access the video through the accompanying PowerPoint the link can also be accessed here:*https://mediaportal.education.ky.gov/curriculum-and-teaching/2019/03/math-module-video/	
Explain: "From p. 7, 'Whenever the word 'fluently' appears in a content standard, the meaning denotes efficiency, accuracy, flexibility and appropriateness. Being fluent means students flexibly choose among methods and strategies to solve contextual and mathematical problems, understand and explain their approaches and provide accurate answers efficiently.'"	
Explain: "On p. 6 of the *KAS for Mathematics*, the importance of procedural skill and fluency is spelled out. 'Procedural skill and fluency is the ability to apply procedures accurately, efficiently, flexibly and appropriately. It requires speed and accuracy in calculation while giving students opportunities to practice basic skills. Students' ability to solve more complex application and modeling tasks is dependent on procedural skill and fluency (National Council Teachers of Mathematics, 2014).'"	

Facilitator Notes	Accompanying Slide(s)
Explain: "Table 6 within Appendix A of the *KAS for Mathematics* is an additional resource dedicated to the standards focused on fluency across all grade levels. Take a moment to look at the fluency standards listed, for your grade level or collectively. Discuss why being fluent in these standards is so important to mathematical proficiency." *Direct participants to page 255 of the KAS for Mathematics.* "Effective teaching practices provide experiences that help students to connect procedures with the underlying concepts and provide students with opportunities to rehearse or practice strategies and to justify their procedures. Think of instructional strategies, technique or structures that are already in place in your classroom or those that you would like to implement." *Potential Talking Points:* *Our students enter school believing the myth that the goal in math is to be fast and be right. Do we unintentionally promote that thinking in our teaching? Do we praise students who get the right answer quickly? Do we become impatient with students who need a little more time?* ● *What are the strategies, techniques and structures you use to build fluency within your classroom?* *Teachers might use manipulatives or provide intentional opportunities for students to talk about their work. Teachers might analyze students' procedures to reveals insights and misunderstandings that help teachers in planning next steps in instruction. Teachers might consider creating a tool to help parents during at-home instruction?* ● *What scaffolding strategies, techniques and structures you use to support students working toward fluency within your classroom?* ○ *Teachers might refer to some of the strategies here:* https://tntp.org/student-experience-toolkit/view/scaffolding-strategies	

Facilitator Notes	Accompanying Slide(s)
○ *Teachers might refer to some of the practices here: https://www.nctm.org/Conferences-and-Professional-Development/Principles-to-Actions-Toolkit/Resources/7-EffectiveMathematicsTeachingPractices* ● *Are there any strategies, techniques and structures surrounding or related to fluency that you might like to try or learn more about?* *Remind teachers that there is always something new to learn about and put into practice. It is widely believed that the more a teacher knows about his subject matter, the more effective he will be as a teacher. Encourage teachers to share professional learning opportunities with one another. Is there a newsletter, podcast, twitter feed, etc. they use to stay informed on current issues regarding teaching mathematics? For example, NCTM has a Tips for Teachers page.*	
Explain: "In addition to the resource for Fluency, there are other resources that provide valuable information for stakeholders in Appendix A. We will look at a couple of those resources that are referenced throughout the K-5 standards in the *KAS for Mathematics.* The example here is of two Kindergarten standards. Notice the bold text in the Clarifications section for these standards, which directs readers to Table 6 in Appendix A."	
Direct participants to pages 251 and 251 of the KAS for Mathematics. **Explain:** When readers examine Table 6, there is really valuable information which should be guiding the Kindergarten instruction and assessment for those two standards. The table itself provides readers with categories of questions that students should be learning. There is a lot of information here.	

Facilitator Notes	Accompanying Slide(s)
First, take note of the information the shading gives the reader: ● Blue shading indicates the four Kindergarten problem subtypes. ● Blue and green shading indicates students in grades 1 and 2 work with all subtypes and variants. ● Yellow indicates problems that are the difficult four problem subtypes students in grade 1 work with but do not need to master until grade 2. Next, the problem types are labeled and have examples (with and without context) with them.	
Explain: "A similar table including similar information but with multiplication and division is on page 252. Take a moment to consider how these might be useful to teachers. Are there other stakeholders who might benefit from knowledge of these two resources? Take a moment to discuss how you might use these tools with your table." *If you are facilitating a group that does not consist of K-5 educators, this idea is not unique to those grade levels. The intentionality behind including these two resources really models the type of intentionality that would be valuable when planning instruction over any set of content. Consider this hypothetical situation: Teacher teaches a lesson. Students engage and seem to learn content. Students are assessed over content. Some students (who previously seemed to understand the content) do not show mastery of the content. The teacher is wondering, "What happened?" Is it possible that multiple types of questioning weren't intentionally built into the lesson during instructional planning? Is there an intentional focus on asking multiple question types throughout instruction in order to make sure students can flexibly apply the content in a variety of contexts? Students can sometime struggle to identify the questions they have when they aren't asked to process content in a variety of ways, similar to the question types in the chart provided. Non K-5 participants might be able to think of topics that students struggle to handle and how they could build supports into their instruction.*	

Facilitator Notes	Accompanying Slide(s)
Facilitate discussion around the essential questions as needed. *Potential talking points:* ● *What does the concept of "fluency" mean when it appears within the KAS for Mathematics?* ○ *Procedural skill and fluency is the ability to apply procedures accurately, efficiently, flexibly and appropriately. It requires speed and accuracy in calculation while giving students opportunities to practice basic skills.* ● *How can educators use the material in Appendix A as a resource when planning and designing instruction?* ○ *Would this resource be useful to parents/guardians or could it be used to create an easy to use instructional aid for parents/guardians?* ○ *How might this be useful when planning and designing instruction?* ○ *How might this be useful when planning and designing assessment?*	
Explain: "In the next section of Module 1 we will recap what we've covered so far about the new *KAS for Mathematics* and begin planning for the "next steps" that need to be taken to successfully implement the standards. Next up: Section 1G: Wrap up of Module 1." *If this is the end of your current work session, please consider asking participants to provide feedback on their experience so far with the module. These instructions will be provided at the end of each section to offer participants the opportunity to provide feedback that will be used by the KDE to plan and prepare future professional learning.* **Explain:** "The KDE needs your feedback on the effectiveness of this module, the learning platform and how the consultants may best support you as you take the next steps. We are going to complete a short survey to share our thinking and provide them with feedback on how the KDE can best	

Facilitator Notes	Accompanying Slide(s)
meet our needs. Feedback from the surveys will be used by the KDE to plan and prepare future professional learning." *Provide participants with the following links:* • Module 1 Survey: https://www.surveymonkey.com/r/WDVSF6N • District/Administrator Module 1 Survey: https://www.surveymonkey.com/r/WD9THPG	

Module 1: Getting to Know the *Kentucky Academic Standards (KAS) for Mathematics*

Preparation for Section 1G: Wrap up & Next Steps

Print Materials Needed:

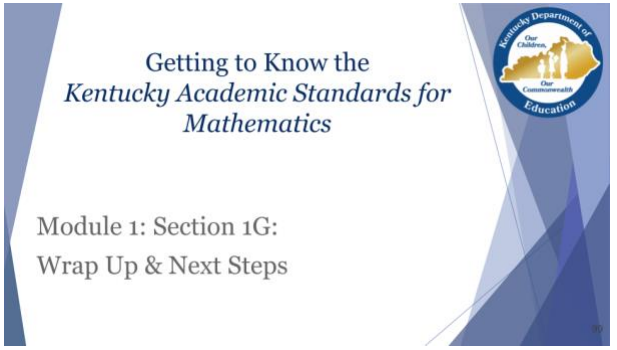
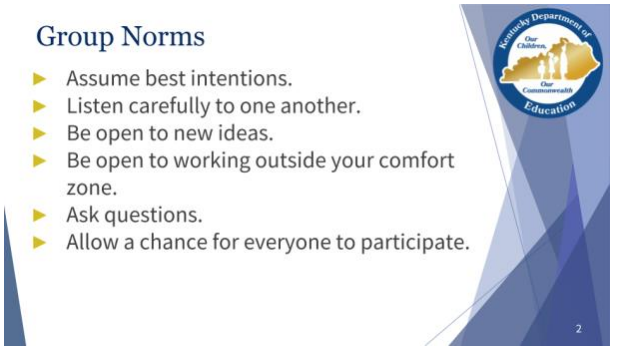
As the facilitator you can print copies of the materials at the links provided or have participants print their own copies. If participants are responsible for printing their own copies, please specify that and provide necessary links within the invitation to the work session. Ensure that you have sufficient copies of the following documents within each work session.

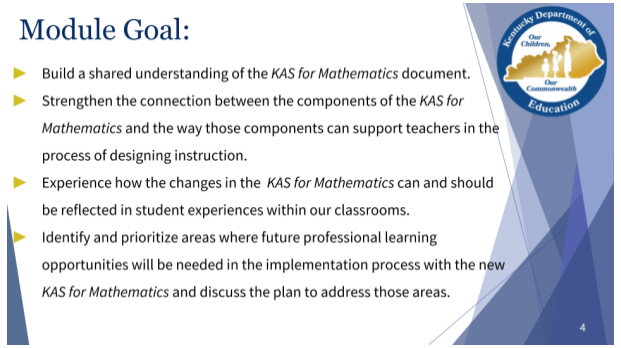
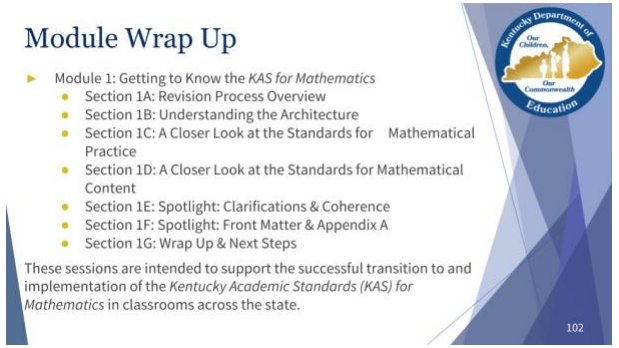
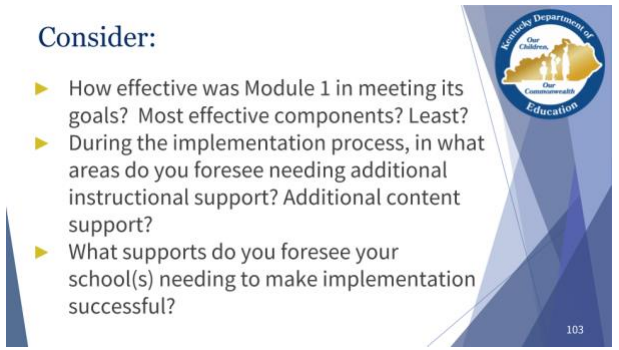
- Section 1G: Wrap up of Module 1 & Next Steps to Implementation
    - Participant Guide: Teachers https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Math_Thinking_Back_to_Plan_for_the_Future_Teacher_Guide.docx
    - Participant Guide: School Leadership https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Math_Thinking_Back_to_Plan_for_the_Future_School_Leadership_Guide.docx
    - Participant Guide: District/State Leadership
    - https://education.ky.gov/curriculum/standards/kyacadstand/Documents/Math_Thinking_Back_to_Plan_for_the_Future_District_State_Leadership_Guide.docx

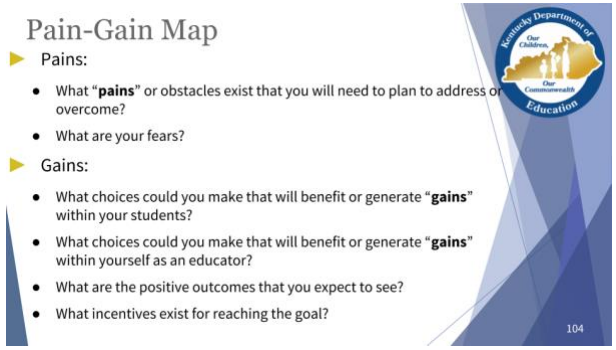
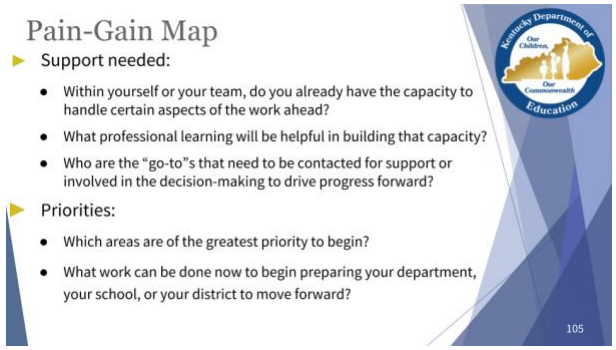
Posters to Make Ahead of Time:

- Issues Bin Poster:
    - Poster can just be labeled “Issues Bin”. The Issues bins can be used by the participant to note ideas, questions, or issues constructively while the class continues to focus on an activity or lesson. This may be a poster or you may prefer to have a digital Issues Bin where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module.

Section 1G: Spotlight: Wrap Up & Next Steps

Facilitator Notes	Accompanying Slide(s)
If facilitating Section 1G at the same time as Section 1F... Explain: "Module 1 is intended to provide an introduction to the new *KAS for Mathematics*. Section 1G focuses on a wrap up of Module 1 and determining next steps for professional learning." ***If facilitating Section 1G at a different time from Section 1F...*** *Officially welcome the participants. Introduce yourself (if necessary).*	
Explain: "Group norms can help to create a safe space where participants feel comfortable sharing their ideas and experiences. Take a moment to read the norms." *Discuss group norms.* ***NOTE: If participants made changes to this slide in the session within Section 1A, you will need to update this slide to reflect those changes moving forward.*** **Explain:** "I realize you may not want to pose every question to the whole group, or we may not have time in the session to get to every question. Therefore, I want us to have a place for to address those issues. *Introduce participants to the Issues Bin. The Issues bin can be used by the participant to note ideas, questions, or issues constructively while the other attendees continue to focus on an activity or lesson. This may be a poster or you may prefer to have a digital parking lot where participants can access a Google document, for example, to post questions and that you can modify as the participants work through the sections of the module. The purpose of the Issues*	

Facilitator Notes	Accompanying Slide(s)
Bin is to provide participants with a safe way of asking questions or suggesting ideas. ***Participants have added to the Issues Bin throughout Module 1. This work session will give participants a chance to reflect upon the module and plan for next steps. It may be helpful for them to access the Issues Bin in planning the work ahead.***	
Explain: "Before we take some time today to consider our next steps, we are going to revisit the overall goals for Module 1."	
Explain: "The seven sessions were designed to meet the four goals of Module 1 and to support teachers, school leaders and district/state leaders in transitioning to and implementing the new *KAS for Mathematics*."	
Explain: "In light of the purpose and function of Module 1, I want you to consider these questions. Take 5 minutes to reflect individually and take notes you will be willing to share with a partner." *After 5 minutes, ask participants to find a partner. Identify who should begin (person with the longest hair, person who is the tallest, person whose name comes first alphabetically, etc.). Partner A should answer question 1 while Partner B listens. Then Partner B shares answer 1 while*	

Facilitator Notes	Accompanying Slide(s)
Partner A listens. Partners should take turns answering the questions until both have shared their responses for all three questions. Use a countdown timer to give them 2 minutes to get through the questions. You may provide an additional minute if the conversations are lively and engaging.	
Setup for Success: Pain-Gain Map **Explain:** "The implementation of the *KAS for Mathematics* will mean that there are changes for educators across the state. To help with generating and prioritizing the next steps in the implementation process, we're going to do a Pain-Gain map. This is an opportunity to collaborate within your work group to create a plan for how you are going to move forward. Essentially, now that you've gotten to know the *KAS for Mathematics*, where do you go from here? Districts and schools will need to prepare and prioritize the next steps in the implementation process. Having an understanding of the *KAS for Mathematics* and its components is just the first step, **actions determine impact**. To help with that process, we're going to do a Pain-Gain map. Most decisions people make are situations where some trade-off exists. First consider: ● What "**pains**" or obstacles will exist that you will need to plan to address? ● What are your fears? Then consider: ● What choices could you make that will benefit or generate "**gains**" within your students? ● What choices could you make that will benefit or generate "gains" within yourself as an educator?	 

Facilitator Notes	Accompanying Slide(s)
● What are the positive outcomes that you expect to see? ● What incentives are there for reaching the goal? It will also be valuable to think about the **support** that you, your department, your school, or your district will need to move forward: ● Within yourself or your team, do you already have the capacity to handle certain aspects of the work ahead? ● What professional learning will be helpful in building that capacity? ● Who are the "go-to"s that need to be contacted for support or involved in the decision-making to drive progress forward? Lastly, consider which of the items are priorities within your department, your school, or your district will need to move forward: ● Which areas are of the greatest priority to begin? ● What work can be done now to begin preparing your department, your school, or your district to move forward? This is an opportunity to collaborate within your work group to create a plan for how you are going to move forward. Essentially, now that you've gotten to know the *KAS for Mathematics*, how do you take your relationship to the next level? What are the next most critical, manageable steps? By framing your understanding of your "work ahead," or the next steps in the process, in this way, your team (whether at the PLC, department, or district level) can collaborate to outline a plan to ensure you are addressing these issues." *NOTE: Be sure participants understand they are to list or bullet the next steps for implementation relating to the principle for action in the "Work Ahead" box. Then, they will continue to frame the "Work Ahead" in the process by considering the pains, gains, supports needed and priorities for each element of the "Work Ahead."*	

Facilitator Notes	Accompanying Slide(s)
Allow participants to work individually, with a partner or in group to reflect, brainstorm, plan and/or discuss. If time allows, guide participants into prioritizing the next steps so that work continues after this meeting. *Pass out the Participant Guide: Thinking Back to Plan for the Future. Participants can use this guide as a planning tool. There is a Participant Guide for Teachers, a Participant Guide for School Leaders, and a Participant Guide for District/State Leaders.*	
Bring the group back together. **Explain:** "The KDE needs your feedback on the effectiveness of this module, the learning platform and how the consultants may best support you as you take the next steps. We are going to complete a short survey to share our thinking and provide them with feedback on how the KDE can best meet our needs. Feedback from our surveys will be used by the KDE to plan and prepare future professional learning." *Provide participants with the survey links:* ● *Module 1 Survey: https://www.surveymonkey.com/r/WDVSF6N* ● *District/Administrator Module 1 Survey: https://www.surveymonkey.com/r/WD9THPG* *Be sure to thank participants for their work throughout this module as it has provided a foundation for future knowledge.* *To you, the facilitator, thank you for providing participants with knowledge and support throughout this process. The KDE greatly values your role in facilitating Module 1. We appreciate your time and effort in leading your school and district in the successful implementation of the KAS for Mathematics. Thank you!*